



Joyce Ackerman, 'Craig Barnitz (cbarnitz@utah.gov)' 03/27/2012 10:55 AM

Hide Details

From: "Shepherd, Michael" < Michael. Shepherd@PacifiCorp.com>

To: Joyce Ackerman/R8/USEPA/US@EPA, "'Craig Barnitz (cbarnitz@utah.gov)" <cbarnitz@utah.gov>

7 Attachments











Weekly Report 03-19 to 03-23-12.pdf Third West Weekly Log 2011-12.pdf 232029-1.pdf 232136-1.pdf 232199-1.pdf



232286-1.pdf 232406-1.pdf

Joyce & Craig,

Attached are the reports for the week of March 19, 2012.

All air monitoring results came back negative.

Please let me know if you have any questions.

Thanks,

Mike Shepherd
Project Manager
Rocky Mountain Power - Major Projects
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determined necessary



3^{RR} WEST SUBSTATION REMEDIATION PROJECT

HEALTH SAFETY MANAGER (HSM)

		DAILY CHECKLIST
DATE	E:	03/19/11
C	manal	
	eneral Work	area Health and Safety Inspection
NA NA		Review and if necessary update Activity Hazard Analyses (AHA) based on planned site
147	1	activities for the day
N/	A .	Safety Planning or "Tailgate" mandatory meeting for all employees and contractors prior to commencement of any site work. Instruction, review hazards, health & safety issues and any modifications to the CSHASP
N/	4	Site hazard and safety instruction for all first time employees, contractors or visitors
N/	4	Complete Employee Meeting Record Form B (where applicable)
· NA	4	Document required Respirator Training completion with Form H
NA		Record times and numbers of dump trucks and trailers as they leave the site with contaminated material.
NA		Confirm return of waste material manifest documents for each load with site manager.
NA	Compl	ete all CSHASP Forms (for applicable activities planned for that day)
	NA	Illness/Injury Report Form A
	NA	Site-Specific Training Record Form C
	NA	Hot Work Permit Form D
	NA	Trench/Evacuation Permit Form E
	NA	Combined Space Entry Permit From F
	abla	Exclusion zone operations are practiced as instructed.
		Decontamination unit is working properly.
		☑ Workers are using decontamination unit as instructed.
		Workers use personal protective equipment properly.
☑		Set air samples at cardinal compass points around exclusion zone. Check throughout the day to ensure proper operation.
	`	Observe control measures for dust and fugitive materials i.e. watering excavation sites and track out prevention.
\(\rightarrow\)		Review sign-in/sign-out log throughout and at the end of the workday. Secure the site at the end of the workday
Sa	mpling	
NA	Soil Co	onfirmation sampling for any newly excavated areas
	5011 C	Stationary Air Monitoring during contaminated soil removal around the perimeter of the exclusion zone
N .	A	Personal Breathing Zone Monitoring on personnel conducting contaminated dust and soi removal
N.	A	Digitally photograph each sample location and at any place field sampling personnel





		Electronically file photo files into the on-site database
		Complete Field Documentation
		Field Sample Data Sheets (FSDS)
		Logbook
	\square	On-site computer database
\checkmark		Label each sample media with a unique number
abla		Seal sample(s) in zip lock plastic bags
☑		Complete and include Chain of Custody (COC) Form required for shipping of samples to appropriate laboratory
		Package samples for transport IAW SOP 2-1, Packaging and Shipping of Environmental Samples
		Review and disseminate sample results as received from the laboratories to Project Manager and other appropriate managers and employees
$ \sqrt{} $		Electronically file sample reports into on-site database



Project: 3rd West Sub Station	Date: <u>03/19/12</u>
Location: 3rd West, 1st South, SLC	Job Number:
Survey Conducted By: <u>Justin Kargis</u>	Title:

		In Compliance	Out of Compliance	N/A	Corrective Action Taken and
Standard	Title				Date
1926.59	Hazard Communication Program, List of Chemicals, Training, MSDSs.			х	, ,
1926.500 (b) & (d) (old standard)	Guardrails on open sided floors, floor holes and runways.			х	
1926.404 (b)	Ground fault circuit interrupters or an assured equipment grounding conductor program in use.	x			a v
1926.451 (b)	The employer shall instruct each employee in the recognition and avoidance of unsafe conditions.			х	
1926.451 (d)	Tubular welded scaffolds shall be properly braced so that they are plumb, square and rigid; legs on plumb, adjustable, mud sills, etc. to support the maximum load; guardrails and toe boards shall be installed.			х	
1926.100 (a)	Head protection, where there is a possible danger of head injury.	x			

		In Compliance	Out of Compliance	N/A	Corrective Action Taken and
Standard	Title				Date
1926.652 (a) (1)	Excavation protective systems; examination by competent person when less than 5 feet in depth.			х	
1926.20 (b) (2)	Employer responsibility to initiate and maintain safety and health programs.			х	
1926.20 (b) (1)	Employer responsibility to provide for frequent and regular inspections by designated competent persons.			x	
1926.451 (e)	Manually propelled scaffolds shall have tight planking for the full width, platforms secured, ladder or stairway provided, suitable footing, stand plumbs, wheels locked, guardrails and toe boards.			х	
1926.1052 (c) (1)	Stair rail and handrail along each unprotected edge.			x	
1926.25 (a)	Debris, scrap lumber with protruding nails, not cleared for work areas, stairs and around structures.			X	
1926.50	First aid shall be available in the absence of an infirmary, or other that is reasonably accessible; first aid supplies shall be accessible and telephone numbers posted.			х	
1926.451 (a) (13)	Scaffolding safe access not provided by ladder or equivalent.			x	
1926.651 (k) (1)	Excavations, protective systems, inspected daily by a competent person and as needed.			x	
1926.403 (b) (2)	Employer shall ensure electrical equipment is free from recognized hazards, is suitable, used in accordance with the listing, labeling or certification.	х			,

		In Compliance	Out of Compliance	N/A	Corrective Action Taken and
Standard	Title				Date
1926.451 (a)	Scaffolding shall have guardrails and toe boards when more than 10 feet high and when less than 45 inches of work space.			х	7
1926.405 (g) (2)	Flexible cords shall be used without splice or tap; strain relief shall be provided.			х	
1926.405 (b)	Electrical boxes, fittings shall have covers, faceplates or canopy and holes shall be smooth where cords pass through; and unused openings in cabinets/boxes shall be closed.	х			
1926.701 (b)	Reinforcing steel onto which employees could fall shall be guarded.		8	х	
1926.1053 (b)	Portable ladder side rails extend at least 3 feet or be secured at top.			х	
1926.651 (j) (2)	Excavations shall have materials or equipment placed at least 2 feet from the edge.			x	8
1926.651 (c) (2)	Excavations shall have a safe means of egress such as ladders, ramps, etc.	х			
1926.150 (c) (1)	Portable fire fighting equipment shall be provided and extinguishers shall be inspected periodically.	x		4	
1926.102 (a) (1)	Eye and face protection shall be provided.	x			
1926.300 (b) (2)	Guards for power tools shall be used and moving parts of equipment shall be guarded.	x			
1926.350 (a)	Oxygen cylinders in storage shall be separated from fuel gas cylinders by at least 20 feet or a ½ fire resistance barrier.			х	
1926.405 (a) (2) (ii) (e) & (f)	Temporary lights shall be protected from breakage, not suspended by their cords and extension cord.			Х	

		In Compliance	Out of Compliance	N/A	Corrective Action Taken and
Standard	Title				Date
1926.405 (a) (2) (ii) (j)	Extension cords used with portable electric tools shall be of three wire type and designed for hard or extra hard usage.	x			
1926.105 (a)	Workplaces more than 25 feet above the ground or water shall have safety nets when ladder, safety line/belts, temporary floors, scaffolds, catch platform are not practical.			х	
1926.1051 (a)	Stairway or ladder shall be provided at all access points where there is a break in elevation of 19 inches or more.	х			
1926.451 (a)	Scaffolding footing or anchorage shall be sound, rigid and capable of carrying the maximum intended load.	x			
1926.500 (c) (1) (old standard)	Wall opening shall be guarded.			х	
1926.404 (f)	Electrical equipment connected by cord and plug shall be grounded except if there is an isolating transformer or the tool is double insulated.	х			
1926.556 (b)	When working from an aerial lift, a full body harness and lanyard attached to the boom or basket.	x			
1926.501 (b) (1) (new standard)	Guardrails, safety nets or personal fall arrest system shall be used at 6 feet or more.			x	
1926.451 (a) (14)	Scaffold planking shall extend over their end support not less than 6 inches and not more than 12 inches.			х	
1926.602 (a) (9)	Bi-directional earth moving equipment shall have audible alarms.	x			

		In Compliance	Out of Compliance	N/A	Corrective Action Taken and
Standard	Title				Date
1926.451 (a) (3)	Scaffolding shall be erected, moved, dismantled or altered under the supervision of a competent person.			x	
1926.550 (b)	Cranes, crawler, truck or locomotive, shall meet the design, testing, maintenance, and operation per ANSI B30.5_1968. The most recent certification shall be on file until a new one is prepared.			х	

Exclusion zone not active today.

Newman backfilled and compacted over excavated area that was previously part of EZ. This included temporarily working around exposed native material in a few areas.

CVE fabricators poured concrete in the conduit trenches from the 46kV vaults down to the south getaway structure. EZ was modified to create a clean zone for the pump truck and concrete trucks to park on by entering the yard through the north gate on 4th west.

CVE line crew continued erecting structure steel in bay 2.

STR continued pulling vacuum and testing for moisture in bay 1 transformer. Planning on working overnight.

Weather was cool, dry, and sunny with temperatures in the high 40s and light winds.





3RD WEST SUBSTATION REMEDIATION PROJECT HEALTH SAFETY MANAGER (HSM)

	DAIL I CHECKLIST
DATE:	03/20/11
Gener	al ·
NA	Work area Health and Safety Inspection
NA	Review and if necessary update Activity Hazard Analyses (AHA) based on planned site
	activities for the day
NA	Safety Planning or "Tailgate" mandatory meeting for all employees and contractors prior to commencement of any site work. Instruction, review hazards, health & safety issues and any modifications to the CSHASP
NA	Site hazard and safety instruction for all first time employees, contractors or visitors
NA	Complete Employee Meeting Record Form B (where applicable)
NA	Document required Respirator Training completion with Form H
NA	Record times and numbers of dump trucks and trailers as they leave the site with contaminated material.
NA ⁻	Confirm return of waste material manifest documents for each load with site manager.
NA Co	mplete all CSHASP Forms (for applicable activities planned for that day)
NA	Illness/Injury Report Form A
. NA	Site-Specific Training Record Form C
NA.	Hot Work Permit Form D
NA.	
. NA	
. 🗹	Exclusion zone operations are practiced as instructed.
	☐ Decontamination unit is working properly.
	☑ Workers are using decontamination unit as instructed.
	☑ Workers use personal protective equipment properly.
☑	Set air samples at cardinal compass points around exclusion zone. Check
	throughout the day to ensure proper operation. Observe control measures for dust and fugitive materials i.e. watering excavation
	sites and track out prevention.
☑	Review sign-in/sign-out log throughout and at the end of the workday.
Ø	Secure the site at the end of the workday
Samp!	ing
NIA C	
NA So ☑	il Confirmation sampling for any newly excavated areas Stationary Air Monitoring during contaminated soil removal around the perimeter of the exclusion zone
NA	Personal Breathing Zone Monitoring on personnel conducting contaminated dust and soil removal
NA	Digitally photograph each sample location and at any place field sampling personnel





☑	Electronically file photo files into the on-site database
	Complete Field Documentation
	Field Sample Data Sheets (FSDS)
	Logbook
	On-site computer database
	Label each sample media with a unique number
abla	Seal sample(s) in zip lock plastic bags
☑	Complete and include Chain of Custody (COC) Form required for shipping of samples to appropriate laboratory
☑	Package samples for transport IAW SOP 2-1, Packaging and Shipping of Environmental Samples
☑	Review and disseminate sample results as received from the laboratories to Project Manager and other appropriate managers and employees
	Electronically file sample reports into on-site database



Project: 3rd West Sub Station		Date: 03/20/12				
Location:	3 rd West, 1 st South, SLC	Job Number:				
Survey Condu	cted By: _Justin Kargis	Title:				

		In Compliance	Out of Compliance	N/A	Corrective Action Taken and
Standard	Title				Date
1926.59	Hazard Communication Program, List of Chemicals, Training, MSDSs.			х	
1926.500 (b) & (d) (old standard)	Guardrails on open sided floors, floor holes and runways.			х	
1926.404 (b)	Ground fault circuit interrupters or an assured equipment grounding conductor program in use.	х	×		,
1926.451 (b)	The employer shall instruct each employee in the recognition and avoidance of unsafe conditions.			x	
1926.451 (d)	Tubular welded scaffolds shall be properly braced so that they are plumb, square and rigid; legs on plumb, adjustable, mud sills, etc. to support the maximum load; guardrails and toe boards shall be installed.			х	
1926.100 (a)	Head protection, where there is a possible danger of head injury.	х			

Standard	Title	In Compliance	Out of Compliance	N/A	Corrective Action Taken and Date
1926.652 (a) (1)	Excavation protective systems; examination by competent person when less than 5 feet in depth.			х	
1926.20 (b) (2)	Employer responsibility to initiate and maintain safety and health programs.			х	
1926.20 (b) (1)	Employer responsibility to provide for frequent and regular inspections by designated competent persons.	8		x	
1926.451 (e)	Manually propelled scaffolds shall have tight planking for the full width, platforms secured, ladder or stairway provided, suitable footing, stand plumbs, wheels locked, guardrails and toe boards.			х	,
1926.1052 (c) (1)	Stair rail and handrail along each unprotected edge.			х	
1926.25 (a)	Debris, scrap lumber with protruding nails, not cleared for work areas, stairs and around structures.			х	
1926.50	First aid shall be available in the absence of an infirmary, or other that is reasonably accessible; first aid supplies shall be accessible and telephone numbers posted.			х	
1926.451 (a) (13)	Scaffolding safe access not provided by ladder or equivalent.			x	
1926.651 (k) (1)	Excavations, protective systems, inspected daily by a competent person and as needed.			х	
1926.403 (b) (2)	Employer shall ensure electrical equipment is free from recognized hazards, is suitable, used in accordance with the listing, labeling or certification.	х			, and the second

		In Compliance	Out of Compliance	N/A	Corrective Action Taken and
Standard	Title				Date
1926.451 (a) (4)	Scaffolding shall have guardrails and toe boards when more than 10 feet high and when less than 45 inches of work space.			х	
1926.405 (g) (2)	Flexible cords shall be used without splice or tap; strain relief shall be provided.			х	
1926.405 (b)	Electrical boxes, fittings shall have covers, faceplates or canopy and holes shall be smooth where cords pass through; and unused openings in cabinets/boxes shall be closed.	x			
1926.701 (b)	Reinforcing steel onto which employees could fall shall be guarded.			x	
1926.1053 (b) (1)	Portable ladder side rails extend at least 3 feet or be secured at top.	n		x	
1926.651 (j) (2)	Excavations shall have materials or equipment placed at least 2 feet from the edge.			x	
1926.651 (c) (2)	Excavations shall have a safe means of egress such as ladders, ramps, etc.	х		×	
1926.150 (c) (1)	Portable fire fighting equipment shall be provided and extinguishers shall be inspected periodically.	х			
1926.102 (a) (1)	Eye and face protection shall be provided.	х			
1926.300 (b) (2)	Guards for power tools shall be used and moving parts of equipment shall be guarded.	x			
1926.350 (a) (9)	Oxygen cylinders in storage shall be separated from fuel gas cylinders by at least 20 feet or a ½ fire resistance barrier.	,		x	
1926.405 (a) (2) (ii) (e) & (f)	Temporary lights shall be protected from breakage, not suspended by their cords and extension cord.			Х	

		In Compliance	Out of Compliance	N/A	Corrective Action Taken and
Standard	Title				Date
1926.405 (a) (2) (ii) (j)	Extension cords used with portable electric tools shall be of three wire type and designed for hard or extra hard usage.	x			
1926.105 (a)	Workplaces more than 25 feet above the ground or water shall have safety nets when ladder, safety line/belts, temporary floors, scaffolds, catch platform are not practical.			х	
1926.1051 (a)	Stairway or ladder shall be provided at all access points where there is a break in elevation of 19 inches or more.	х			
1926.451 (a) (2)	Scaffolding footing or anchorage shall be sound, rigid and capable of carrying the maximum intended load.	х			
1926.500 (c) (1) (old standard)	Wall opening shall be guarded.			х	
1926.404 (f)	Electrical equipment connected by cord and plug shall be grounded except if there is an isolating transformer or the tool is double insulated.	х			
1926.556 (b)	When working from an aerial lift, a full body harness and lanyard attached to the boom or basket.	x			
1926.501 (b) (1) (new standard)	Guardrails, safety nets or personal fall arrest system shall be used at 6 feet or more.			х	
1926.451 (a) (14)	Scaffold planking shall extend over their end support not less than 6 inches and not more than 12 inches.			х	
1926.602 (a) (9)	Bi-directional earth moving equipment shall have audible alarms.	x			

		In Compliance	Out of Compliance	N/A	Corrective Action Taken and
Standard	Title				Date
1926.451 (a) (3)	Scaffolding shall be erected, moved, dismantled or altered under the supervision of a competent person.			х	
1926.550 (b)	Cranes, crawler, truck or locomotive, shall meet the design, testing, maintenance, and operation per ANSI B30.5_1968. The most recent certification shall be on file until a new one is prepared.			x	

Exclusion zone not active today.

Newman continued to backfill area previously inside the exclusion zone. Very little exposed native soil outside the EZ boundary present. They applied water to the pile of contaminated material inside the EZ. CVE line crew continued to erect structure steel and attach componentry.

CVE fabricators poured 200 yards of FTB from 46kV vaults down to the south getaway structure. This encapsulated much of the exposed native material throughout this area.

STR continued to pull vacuum and set up transformers.

Weather was dry, sunny and mild. Temperatures in the mid 50s and slightly breezy.





3RD WEST SUBSTATION REMEDIATION PROJECT HEALTH SAFETY MANAGER (HSM)

	DINET CHECKERS
DATE:	03/21/11
General NA NA NA NA NA NA NA NA NA	Work area Health and Safety Inspection Review and if necessary update Activity Hazard Analyses (AHA) based on planned site activities for the day Safety Planning or "Tailgate" mandatory meeting for all employees and contractors prior to commencement of any site work. Instruction, review hazards, health & safety issues and any modifications to the CSHASP Site hazard and safety instruction for all first time employees, contractors or visitors Complete Employee Meeting Record Form B (where applicable) Document required Respirator Training completion with Form H Record times and numbers of dump trucks and trailers as they leave the site with contaminated material. Confirm return of waste material manifest documents for each load with site manager. plete all CSHASP Forms (for applicable activities planned for that day) Illness/Injury Report Form A Site-Specific Training Record Form C Hot Work Permit Form D Trench/Evacuation Permit Form E Combined Space Entry Permit From F Exclusion zone operations are practiced as instructed. Decontamination unit is working properly. Workers are using decontamination unit as instructed.
	☑ Workers use personal protective equipment properly.
<u> </u>	Set air samples at cardinal compass points around exclusion zone. Check throughout the day to ensure proper operation. Observe control measures for dust and fugitive materials i.e. watering excavation sites and track out prevention. Review sign-in/sign-out log throughout and at the end of the workday. Secure the site at the end of the workday
Samplir	g
NA Soil ☑ NA NA	Confirmation sampling for any newly excavated areas Stationary Air Monitoring during contaminated soil removal around the perimeter of the exclusion zone Personal Breathing Zone Monitoring on personnel conducting contaminated dust and soil removal Digitally photograph each sample location and at any place field sampling personnel determined necessary





\square	Electronically file photo files into the on-site database
☑	Complete Field Documentation
	Field Sample Data Sheets (FSDS)
	Logbook
	On-site computer database
\checkmark	Label each sample media with a unique number
	Seal sample(s) in zip lock plastic bags
Ø	Complete and include Chain of Custody (COC) Form required for shipping of samples to appropriate laboratory
Ø	Package samples for transport IAW SOP 2-1, Packaging and Shipping of Environmental Samples
Ø	Review and disseminate sample results as received from the laboratories to Project Manager and other appropriate managers and employees
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Project: 3rd West Sub Station	Date: 03/20/12	
Location: 3rd West, 1st South, SLC	Job Number:	
Survey Conducted By:	Title:	

		In Compliance	Out of Compliance	N/A	Corrective Action Taken and
Standard	Title				Date
1926.59	Hazard Communication Program, List of Chemicals, Training, MSDSs.			x	
1926.500 (b) & (d) (old standard)	Guardrails on open sided floors, floor holes and runways.	-		х	
1926.404 (b)	Ground fault circuit interrupters or an assured equipment grounding conductor program in use.	х	¥		
1926.451 (b)	The employer shall instruct each employee in the recognition and avoidance of unsafe conditions.			х	
1926.451 (d)	Tubular welded scaffolds shall be properly braced so that they are plumb, square and rigid; legs on plumb, adjustable, mud sills, etc. to support the maximum load; guardrails and toe boards shall be installed.			х	
1926.100 (a)	Head protection, where there is a possible danger of head injury.	х			

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1926.451 (e)	Manually propelled scaffolds shall have tight planking for the full width, platforms secured, ladder or stairway provided, suitable footing, stand plumbs, wheels locked, guardrails and toe boards.			x	
1926.1052 (c) (1)	Stair rail and handrail along each unprotected edge.			x	
1926.25 (a)	Debris, scrap lumber with protruding nails, not cleared for work areas, stairs and around structures.			x	
1926.50	First aid shall be available in the absence of an infirmary, or other that is reasonably accessible; first aid supplies shall be accessible and telephone numbers posted.			х	,
1926.451 (a) (13)	Scaffolding safe access not provided by ladder or equivalent.			x	
1926.651 (k) (1)	Excavations, protective systems, inspected daily by a competent person and as needed.			x	
1926.403 (b) (2)	Employer shall ensure electrical equipment is free from recognized hazards, is suitable, used in accordance with the listing, labeling or certification.	х			

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Standard	Title ·				Date
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1926.405 (b)	Electrical boxes, fittings shall have covers, faceplates or canopy and holes shall be smooth where cords pass through; and unused openings in cabinets/boxes shall be closed.	х	,		
1926.701 (b)	Reinforcing steel onto which employees could fall shall be guarded.			x	
1926.1053 (b) (1)	Portable ladder side rails extend at least 3 feet or be secured at top.			х	
1926.651 (j) (2)	Excavations shall have materials or equipment placed at least 2 feet from the edge.			x	
1926.651 (c) (2)	Excavations shall have a safe means of egress such as ladders, ramps, etc.	х			
1926.150 (c) (1)	Portable fire fighting equipment shall be provided and extinguishers shall be inspected periodically.	х			
1926.102 (a) (1)	Eye and face protection shall be provided.	x			
1926.300 (b) (2)	Guards for power tools shall be used and moving parts of equipment shall be guarded.	х			
1926.350 (a)	Oxygen cylinders in storage shall be separated from fuel gas cylinders by at least 20 feet or a ½ fire resistance barrier.			x	
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1926.1051 (a)	Stairway or ladder shall be provided at all access points where there is a break in elevation of 19 inches or more.	x			
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1926.404 (f)	Electrical equipment connected by cord and plug shall be grounded except if there is an isolating transformer or the tool is double insulated.	х			
1926.556 (b)	When working from an aerial lift, a full body harness and lanyard attached to the boom or basket.	x			
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1926.602 (a) (9)	Bi-directional earth moving equipment shall have audible alarms.	x			

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Standard	Title				Date
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Exclusion zone not active today.

Newman continued to backfill area previously inside the exclusion zone and covered the FTB pour from 3/20. They wet up additional sections of fencing to properly section off the pile of contaminated material inside the EZ.

CVE line crew continued adding componentry to structure steel and assembled buss work.

CVE fabricators not on site today.

STR added oil to transformer in bay 1.

Weather was warm, dry, and sunny with highs in the mid 60s and slight south breezes.





3RD WEST SUBSTATION REMEDIATION PROJECT

HEALTH SAFETY MANAGER (HSM)

	DAILT CHECKLIST
DATE:	03/22/11
Conoral	
<u>General</u> NA	Work area Health and Safety Inspection
NA NA	Review and if necessary update Activity Hazard Analyses (AHA) based on planned site
IVA	activities for the day
NA	Safety Planning or "Tailgate" mandatory meeting for all employees and contractors prior
·	to commencement of any site work. Instruction, review hazards, health & safety issues and any modifications to the CSHASP
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NA	Complete Employee Meeting Record Form B (where applicable)
NA NA	Document required Respirator Training completion with Form H
NA	Record times and numbers of dump trucks and trailers as they leave the site with
	contaminated material.
NA	Confirm return of waste material manifest documents for each load with site manager.
NA Comp	elete all CSHASP Forms (for applicable activities planned for that day)
NA Î	Illness/Injury Report Form A
NA	Site-Specific Training Record Form C
NA	Hot Work Permit Form D
NA	Trench/Evacuation Permit Form E
NA	Combined Space Entry Permit From F
\square	Exclusion zone operations are practiced as instructed.
~	☑ Decontamination unit is working properly.
	☑ Workers are using decontamination unit as instructed.
	☑ Workers use personal protective equipment properly.
\square	Set air samples at cardinal compass points around exclusion zone. Check
	throughout the day to ensure proper operation.
	Observe control measures for dust and fligitive materials i.e. watering excavation
	sites and track out prevention.
\square	Review sign-in/sign-out log throughout and at the end of the workday.
Ø	Secure the site at the end of the workday
Sampling	
NA Soil C	Confirmation sampling for any newly excavated areas
\square	Stationary Air Monitoring during contaminated soil removal around the perimeter of the
	exclusion zone
NA	Personal Breathing Zone Monitoring on personnel conducting contaminated dust and soil
	removal
NA	Digitally photograph each sample location and at any place field sampling personnel determined necessary





Ø		Electronically file photo files into the on-site database
Ø		Complete Field Documentation
	Ø	Field Sample Data Sheets (FSDS)
	I	Logbook
	Ø	On-site computer database
Ø		Label each sample media with a unique number
Ø		Seal sample(s) in zip lock plastic bags
Ø		Complete and include Chain of Custody (COC) Form required for shipping of samples to appropriate laboratory
Ø		Package samples for transport IAW SOP 2-1, Packaging and Shipping of Environmental Samples
\square		Review and disseminate sample results as received from the laboratories to Project
		Manager and other appropriate managers and employees
Ø		Electronically file sample reports into on-site database



Project: 3rd West Sub Station	Date: 03/22/12
Location: 3rd West, 1st South, SLC	Job Number:
Survey Conducted By: Justin Kargis	Title:

		In Compliance	Out of Compliance	N/A	Corrective Action Taken and
Standard	Title				Date
1926.59	Hazard Communication Program, List of Chemicals, Training, MSDSs.			х	
1926.500 (b) & (d) (old standard)	Guardrails on open sided floors, floor holes and runways.		5	х	
1926.404 (b)	Ground fault circuit interrupters or an assured equipment grounding conductor program in use.	х			
1926.451 (b)	The employer shall instruct each employee in the recognition and avoidance of unsafe conditions.			х	
1926.451 (d)	Tubular welded scaffolds shall be properly braced so that they are plumb, square and rigid; legs on plumb, adjustable, mud sills, etc. to support the maximum load; guardrails and toe boards shall be installed.			х	
1926.100 (a)	Head protection, where there is a possible danger of head injury.	x			

		In Compliance	Out of Compliance	N/A	Corrective Action Taken and
Standard	Title				Date
1926.652 (a) (1)	Excavation protective systems; examination by competent person when less than 5 feet in depth.			x	
1926.20 (b) (2)	Employer responsibility to initiate and maintain safety and health programs.			х	
1926.20 (b)	Employer responsibility to provide for frequent and regular inspections by designated competent persons.	N	8	x	
1926.451 (e)	Manually propelled scaffolds shall have tight planking for the full width, platforms secured, ladder or stairway provided, suitable footing, stand plumbs, wheels locked, guardrails and toe boards.			x	
1926.1052 (c) (1)	Stair rail and handrail along each unprotected edge.			x	
1926.25 (a)	Debris, scrap lumber with protruding nails, not cleared for work areas, stairs and around structures.			x	
1926.50	First aid shall be available in the absence of an infirmary, or other that is reasonably accessible; first aid supplies shall be accessible and telephone numbers posted.			х	
1926.451 (a) (13)	Scaffolding safe access not provided by ladder or equivalent.			x	
1926.651 (k) (1)	Excavations, protective systems, inspected daily by a competent person and as needed.			х	
1926.403 (b) (2)	Employer shall ensure electrical equipment is free from recognized hazards, is suitable, used in accordance with the listing, labeling or certification.	x			

		In Compliance	Out of Compliance	N/A	Corrective Action Taken and
Standard	Title				Date
1926.451 (a) (4)	Scaffolding shall have guardrails and toe boards when more than 10 feet high and when less than 45 inches of work space.			х	,
1926.405 (g) (2)	Flexible cords shall be used without splice or tap; strain relief shall be provided.			х	
1926.405 (b)	Electrical boxes, fittings shall have covers, faceplates or canopy and holes shall be smooth where cords pass through; and unused openings in cabinets/boxes shall be closed.	х			
1926.701 (b)	Reinforcing steel onto which employees could fall shall be guarded.			x	
1926.1053 (b) (1)	Portable ladder side rails extend at least 3 feet or be secured at top.			х	
1926.651 (j) (2)	Excavations shall have materials or equipment placed at least 2 feet from the edge.			х	
1926.651 (c) (2)	Excavations shall have a safe means of egress such as ladders, ramps, etc.	х			
1926.150 (c) (1)	Portable fire fighting equipment shall be provided and extinguishers shall be inspected periodically.	x			,
1926.102 (a) (1)	Eye and face protection shall be provided.	x			
1926.300 (b) (2)	Guards for power tools shall be used and moving parts of equipment shall be guarded.	x			
1926.350 (a)	Oxygen cylinders in storage shall be separated from fuel gas cylinders by at least 20 feet or a ½ fire resistance barrier.			х	
1926.405 (a) (2) (ii) (e) & (f)	Temporary lights shall be protected from breakage, not suspended by their cords and extension cord.			Х	

		In Compliance	Out of Compliance	N/A	Corrective Action Taken and
Standard	Title				Date
1926.405 (a) (2) (ii) (j)	Extension cords used with portable electric tools shall be of three wire type and designed for hard or extra hard usage.	х			
1926.105 (a)	Workplaces more than 25 feet above the ground or water shall have safety nets when ladder, safety line/belts, temporary floors, scaffolds, catch platform are not practical.			x	
1926.1051 (a)	Stairway or ladder shall be provided at all access points where there is a break in elevation of 19 inches or more.	x			
1926.451 (a)	Scaffolding footing or anchorage shall be sound, rigid and capable of carrying the maximum intended load.	х			
1926.500 (c) (1) (old standard)	Wall opening shall be guarded.			x	
1926.404 (f) (7)	Electrical equipment connected by cord and plug shall be grounded except if there is an isolating transformer or the tool is double insulated.	x			
1926.556 (b) (2)	When working from an aerial lift, a full body harness and lanyard attached to the boom or basket.	X			
1926.501 (b) (1) (new standard)	Guardrails, safety nets or personal fall arrest system shall be used at 6 feet or more.			х	
1926.451 (a) (14)	Scaffold planking shall extend over their end support not less than 6 inches and not more than 12 inches.			х	
1926.602 (a) (9)	Bi-directional earth moving equipment shall have audible alarms.	x			

		In Compliance	Out of Compliance	N/A	Corrective Action Taken and
Standard	Title				Date
1926.451 (a) (3)	Scaffolding shall be erected, moved, dismantled or altered under the supervision of a competent person.			x	
1926.550 (b) (2)	Cranes, crawler, truck or locomotive, shall meet the design, testing, maintenance, and operation per ANSI B30.5_1968. The most recent certification shall be on file until a new one is prepared.			х	

Exclusion zone not active today.

Newman continued to backfill area west of bay 2 and around the switchgear building.

CVE line crew continued work on structure steel and buss work.

CVE fabricators applied grout to structural steel foundation piers.

STR continued testing transformers.

Weather was warm, dry, and sunny with temperatures around 70 and no winds.





3RD WEST SUBSTATION REMEDIATION PROJECT HEALTH SAFETY MANAGER (HSM)

	DAILT CHECKEIST
DATE:	03/23/11
General	
NA	Work area Health and Safety Inspection
NA	Review and if necessary update Activity Hazard Analyses (AHA) based on planned site
1112	activities for the day
NA	Safety Planning or "Tailgate" mandatory meeting for all employees and contractors prior
IIA	to commencement of any site work. Instruction, review hazards, health & safety issues and any modifications to the CSHASP
NA	Site hazard and safety instruction for all first time employees, contractors or visitors
NA	Complete Employee Meeting Record Form B (where applicable)
NA	Document required Respirator Training completion with Form H
NA	Record times and numbers of dump trucks and trailers as they leave the site with
1 1/1	contaminated material.
NA	Confirm return of waste material manifest documents for each load with site
147	manager.
NA Comr	blete all CSHASP Forms (for applicable activities planned for that day)
NA	Illness/Injury Report Form A
NA NA	Site-Specific Training Record Form C
NA NA	Hot Work Permit Form D
NA NA	Trench/Evacuation Permit Form E
NA	
NA. ☑	Combined Space Entry Permit From F
[V]	Exclusion zone operations are practiced as instructed.
	Decontamination unit is working properly.
	✓ Workers are using decontamination unit as instructed.
	✓ Workers use personal protective equipment properly.
$\overline{\square}$	Set air samples at cardinal compass points around exclusion zone. Check
•	throughout the day to ensure proper operation.
	Observe control measures for dust and fugitive materials i.e. watering excavation
	sites and track out prevention.
\square	Review sign-in/sign-out log throughout and at the end of the workday.
\square	Secure the site at the end of the workday
<u>Sampling</u>	nt.
<u> </u>	
NA Soil (Confirmation sampling for any newly excavated areas
\square	Stationary Air Monitoring during contaminated soil removal around the perimeter of the
	exclusion zone
NA	Personal Breathing Zone Monitoring on personnel conducting contaminated dust and soil
	removal
NA	Digitally photograph each sample location and at any place field sampling personnel
_	determined necessary





V		Electronically file photo files into the on-site database
☑		Complete Field Documentation
		Field Sample Data Sheets (FSDS)
	$\overline{\mathbf{V}}$	Logbook
	$\overline{\mathbf{V}}$	On-site computer database
		Label each sample media with a unique number
\checkmark		Seal sample(s) in zip lock plastic bags
V		Complete and include Chain of Custody (COC) Form required for shipping of samples to appropriate laboratory
V		Package samples for transport IAW SOP 2-1, Packaging and Shipping of Environmental Samples
Ø		Review and disseminate sample results as received from the laboratories to Project Manager and other appropriate managers and employees
✓		Electronically file sample reports into on-site database



Project: 3rd West Sub Station	Date: 03/23/12		
Location: 3 rd West, 1 st South, SLC	Job Number:		
Survey Conducted By: _Justin Kargis	Title:		

		In Compliance	Out of Compliance	N/A	Corrective Action Taken and
Standard	Title				Date
1926.59	Hazard Communication Program, List of Chemicals, Training, MSDSs.			x	
1926.500 (b) & (d) (old standar [‡] d)	Guardrails on open sided floors, floor holes and runways.			x	
1926.404 (b)	Ground fault circuit interrupters or an assured equipment grounding conductor program in use.	х			
1926.451 (b)	The employer shall instruct each employee in the recognition and avoidance of unsafe conditions.	,		х	
1926.451 (d)	Tubular welded scaffolds shall be properly braced so that they are plumb, square and rigid; legs on plumb, adjustable, mud sills, etc. to support the maximum load; guardrails and toe boards shall be installed.			x	
1926.100 (a)	Head protection, where there is a possible danger of head injury.	x			

Standard	Title	In Compliance	Out of Compliance	D N/A	Corrective Action Taken and Date
1926.652 (a) (1)	Excavation protective systems; examination by competent person when less than 5 feet in depth.			x	
1926.20 (b) (2)	Employer responsibility to initiate and maintain safety and health programs.			х	
1926.20 (b)	Employer responsibility to provide for frequent and regular inspections by designated competent persons.			х	
1926.451 (e)	Manually propelled scaffolds shall have tight planking for the full width, platforms secured, ladder or stairway provided, suitable footing, stand plumbs, wheels locked, guardrails and toe boards.			x	
1926.1052 (c) (1)	Stair rail and handrail along each unprotected edge.			х	
1926.25 (a)	Debris, scrap lumber with protruding nails, not cleared for work areas, stairs and around structures.		5	x	,
1926.50	First aid shall be available in the absence of an infirmary, or other that is reasonably accessible; first aid supplies shall be accessible and telephone numbers posted.			х	
1926.451 (a) (13)	Scaffolding safe access not provided by ladder or equivalent.			x	
1926.651 (k) (1)	Excavations, protective systems, inspected daily by a competent person and as needed.			x	
1926.403 (b) (2)	Employer shall ensure electrical equipment is free from recognized hazards, is suitable, used in accordance with the listing, labeling or certification.	х			

		In Compliance	Out of Compliance	N/A	Corrective Action Taken and
Standard	Title				Date
1926.451 (a)	Scaffolding shall have guardrails and toe boards when more than 10 feet high and when less than 45 inches of work space.			х	
1926.405 (g) (2)	Flexible cords shall be used without splice or tap; strain relief shall be provided.			х	
1926.405 (b)	Electrical boxes, fittings shall have covers, faceplates or canopy and holes shall be smooth where cords pass through; and unused openings in cabinets/boxes shall be closed.	x			
1926.701 (b)	Reinforcing steel onto which employees could fall shall be guarded.	27		x	
1926.1053 (b) (1)	Portable ladder side rails extend at least 3 feet or be secured at top.			x	
1926.651 (j) (2)	Excavations shall have materials or equipment placed at least 2 feet from the edge.			х	
1926.651 (c) (2)	Excavations shall have a safe means of egress such as ladders, ramps, etc.	х			2
1926.150 (c) (1)	Portable fire fighting equipment shall be provided and extinguishers shall be inspected periodically.	x			
1926.102 (a) (1)	Eye and face protection shall be provided.	x			
1926.300 (b) (2)	Guards for power tools shall be used and moving parts of equipment shall be guarded.	x			
1926.350 (a)	Oxygen cylinders in storage shall be separated from fuel gas cylinders by at least 20 feet or a ½ fire resistance barrier.			х	
1926.405 (a) (2) (ii) (e) & (f)	Temporary lights shall be protected from breakage, not suspended by their cords and extension cord.			Х	8

Standard	Title	In Compliance	Out of Compliance	N/A	Corrective Action Taken and
					Date
1926.405 (a) (2) (ii) (j)	Extension cords used with portable electric tools shall be of three wire type and designed for hard or extra hard usage.	х			
1926.105 (a)	Workplaces more than 25 feet above the ground or water shall have safety nets when ladder, safety line/belts, temporary floors, scaffolds, catch platform are not practical.			х	
1926.1051 (a)	Stairway or ladder shall be provided at all access points where there is a break in elevation of 19 inches or more.	х			
1926.451 (a)	Scaffolding footing or anchorage shall be sound, rigid and capable of carrying the maximum intended load.	x			
1926.500 (c) (1) (old standard)	Wall opening shall be guarded.			х	
1926.404 (f)	Electrical equipment connected by cord and plug shall be grounded except if there is an isolating transformer or the tool is double insulated.	x			
1926.556 (b)	When working from an aerial lift, a full body harness and lanyard attached to the boom or basket.	X			
1926.501 (b) (1) (new standard)	Guardrails, safety nets or personal fall arrest system shall be used at 6 feet or more.			х	
1926.451 (a) (14)	Scaffold planking shall extend over their end support not less than 6 inches and not more than 12 inches.			x	
1926.602 (a) (9)	Bi-directional earth moving equipment shall have audible alarms.	х			

		In Compliance	Out of Compliance	N/A	Corrective Action Taken and
Standard	Title				Date
1926.451 (a) (3)	Scaffolding shall be erected, moved, dismantled or altered under the supervision of a competent person.			x	
1926.550 (b)	Cranes, crawler, truck or locomotive, shall meet the design, testing, maintenance, and operation per ANSI B30.5_1968. The most recent certification shall be on file until a new one is prepared.			х	V

Exclusion zone not active today.

Newman continued to backfill area west of bay 2 and around the switchgear building. They applied water to stockpiled native soil in the EZ and throughout the yard.

CVE line crew continued work on structure steel and buss work.

CVE fabricators applied grout and foundation plaster to piers. and transformer pads.

STR continued testing transformers.

Weather was warm, dry, and overcast with temperatures around 70 and light wind.



РНОТО 1



РНОТО 2



РНОТО 3



РНОТО 4

R & REnvironmental, Inc.
47 West 9000 South, Suite #2, Sandy, Utah 84070
(801) 352-2380 • Fax: (801) 352-2381

PROJECT NO:

DESIGNED BY:	SCALE:	REVIEWED BY: DCR	
DRAWN BY: JMK	DATE 03/20/12	FILE:	

SITE PHOTOGRAPHS

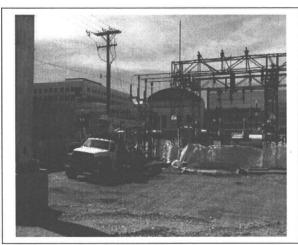




РНОТО 1



РНОТО 2



РНОТО 3

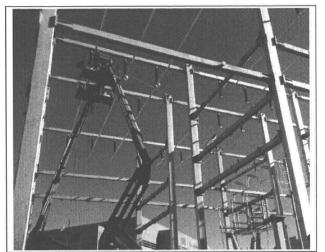
R & REnvironmental, Inc.
47 West 9000 South, Suite #2, Sandy, Utah 84070
(801) 352-2380 • Fax: (801) 352-2381

PROJECT NO:

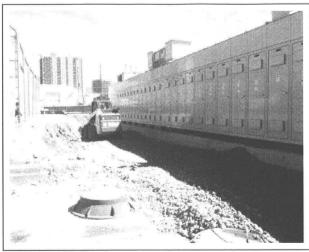
DESIGNED BY:	SCALE:	REVIEWED BY: DCR
DRAWN BY: JMK	DATE 03/21/12	FILE:

SITE PHOTOGRAPHS

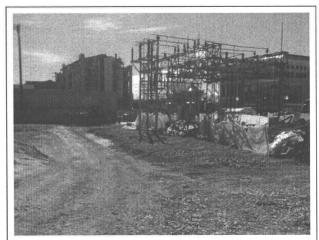




РНОТО 1



РНОТО 2



РНОТО 3

R & REnvironmental, Inc.

47 West 9000 South, Suite #2, Sandy, Utah 84070 (801) 352-2380 • Fax: (801) 352-2381

PROJECT NO:

DESIGNED BY:	SCALE:	REVIEWED BY: DCR	
DRAWN BY: JMK	DATE 03/22/12	FILE:	

SITE PHOTOGRAPHS

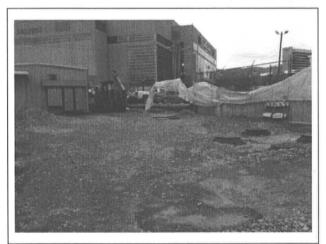




РНОТО 1



РНОТО 2



РНОТО 3

R & REnvironmental, Inc.
47 West 9000 South, Suite #2, Sandy, Utah 84070
(801) 352-2380 • Fax: (801) 352-2381

PROJECT NO:

DESIGNED BY:	SCALE:	REVIEWED BY: DCR	
DRAWN BY: JMK	DATE 03/23/12	FILE:	

SITE PHOTOGRAPHS



PACIFICORP OPERATIONS - Field Construction Representative Daily Log Sunday, March 18, 2011 PROJECT NAME: Third West Sub - Rebuild DATE: PO & Work Order NO.: 3000078050 / 10035803 MAIN CONTRACTOR: Cache Valley Electric Crew Start Time: 7:55 **Crew Stop Time:** 12:25 Tot Hrs mns: Tot Hrs mns: FCR Start Time: 7:55 FCR Stop Time: 12:28 Use military time format 00:00 **WEATHER CONDITIONS:** Rain and Snow, 35 degrees in AM, 40 degrees at Noon. DESCRIPTION: (work performed, general comments, instructions to contractor, # of crew members onsite.) No R&R monitoring today. STR moved oil processing trailer and generator, along with auxiliary equipment to Xfmr #1. STR replaced one of the damaged CT blocks. We are still waiting for one additional CT block from Hyundai. No CVE or Newman crews are on site today. CVE Fab Crew =0, CVE Line Crew = 0, CVE Electrical Crew = 0, Newman = 0, STR = 4, R&R = 0, Wilding =0. IF WORKING IN ENERGIZED SUBSTATION: Dispatcher login, name and time: Mike Spence 0755 Dispatcher logout, name and time: Mike Spence 1228 DISCREPANCIES: IMMEDIATE CORRECTIVE ACTION TAKEN: 3/2 - Two aux relays missing from Pederson Switchgear. Pederson has confirmed that aux relays will be shipped on 3/23. 11/30 - Identified an additional retaining wall that is below grade and does not show on the | Will excavate to determine dimensions. 12/15 - Excavated to locate the 46 kV cables exiting the west side of the yard. Dug 8' and Sent e-mail to Roger F. didn't find them. Will try again. Actual deoth will be much deeper than design of new bank **DELAYS OR LOST TIME ENCOUNTERED:**

EQUIPMENT (working, delivered, idle):

CVE fab crew: Portable toilet (3), forklift, 1 dumpster, office trailer, conex, exclusion zone conex. (2), tool trailer, crew truck. CVE Line Crew: Pickup (2), boom truck, JLG (2), tool trailer. Newman: trachoe (4), loader, bobcat, mini-ex (2), water truck, compactor, backhoe. STR = crew truck, tool trailer, boom truck, processing trailer, generator.

OSHA Recordable Safety Incidents: Reported by: Time:



Russ Johnson

PACIFICORP OPERATIONS - Field Construction Representative Daily Log

PROJECT NAME:	Third Wes	st Sub - Rebuild	DATE :	Monday, March 19, 2012					
PO & Work Order NO. :	3000078	050 / 10035803	MAIN CONTR	ACTOR:	Cache Valle	ey Electric			
Crew Start Time:	6.50	Crew Stop Time:	23.59	•	Tot Hrs mns:	17:09			
FCR Start Time:	6:42	FCR Stop Time:	23:59		Tot Hrs mns:	17:17			
Use military time format 00:00		, or otop time.	20.00			17.17			
ose minery unic rounal co.so									
WEATHER CONDITIONS:		Rain and Snow, 35	degrees in AM, 45	degrees	in PM				
DESCRIPTION: (work perfo	rmed general c	comments instructions to	contractor # of	crow mai	mhare ancita				
R&R set up four monitdors. CVE the columns on anchor bolts and bushing damage) to the site. CVI duct bank. Fab crew is also work Gadsby lines. Fab crew also pou 46 kV duct bank and ensuring the afternoon. Newman is reposition concrete. STR is installing groun #1. They started pulling vacuum has identified that there may be a is preparing an email, with picture Fab Crew =5, CVE Line Crew = 4	some beams in po E electrical crew is king at 550 W and ared 2000 psi conc at there is adequate ing the EZ fence a ding cable to the L at 12:00 and start a leak in the nitroges to send to Hyun	osition in the yard. IRH delivered is working at another site. CVE 100 So to place conduit, sand, crete (40 cyds) for 46 kV duct be declearance under and around and adding fence along north actual and HV arrestors and the X) ed pumping and circulating oil agen regulator systems on both Xidai, STR, and RMP. Ron Olie	d the last two HVB fab crew is preparir elbows and concret onk and north end of the conduits before cess drive for pump bushings and is profit 13:00. Cold trap fmrs, as we lost presken relieved me at	CBs (which the formula to pour of the formula to fab crew in the pour of the fab crew in the fab creeding when the fat 16:00 the fat fat 16:00 the fat	ch had sustained concrete over/a kV risers on the ults. Newman installs concrete as to place duct with pulling vacuuto or resulted in 3-rnight on both o	d some round 46 kt Jordan and is completine this bank sum on Xfm + oz. STR f them. ST			
IF WORKING IN ENERGIZED	SUBSTATION	:							
Dispatcher login, name and time:	Manny LuHa	aun 0642							
Dispatcher logout, name and time	Notified disp	patcher that Ron was in the yard	and we will log ou	t when our	24/7 is over.				
DISCREPANCIES:		*	IMMEDIATE CO	RRECTIV	E ACTION TA	AKEN:			
3/2 - Two aux relays missing from Pe	derson Switchgear.		Pederson has confirm	ned that aux	relays will be shi	pped on 3/23			
	 								
•									
		1							
11/30 - identified an additional retaini	ng wall that is below	grade and does not show on the	Will excavate to deter	mine dimen	sions.				
Demo Plan.	/ aablaa assidaa dhaad	upot side of the word. Due Ol and	Cont o mail to Doors						
12/15 - Excavated to locate the 46 kV didn't find them. Will try again. Actua			Sent e-mail to Roger	r.					
DELAYS OR LOST TIME EN		raceper train design of new bank							
•									
						•			
FOURDMENT (see also as also in	a ! at - \ .								
EQUIPMENT (working, deliv			(0) (1) -1		ovel: o	D'.1 - (0)			
CVE fab crew: Portable toilet (3), for boom truck, JLG (2), tool trailer. New truck, processing trailer, generator.									
OSHA Recordable Safety In	cidents:		R	Reported	bv:	Time:			
			1		1	- -			
	-	•							



Russ Johnson

PACIFICORP OPERATIONS - Field Construction Representative Daily Log Third West Sub - Rebuild Tuesday, March 20, 2012 PROJECT NAME: DATE: PO & Work Order NO. : 3000078050 / 10035803 MAIN CONTRACTOR: Cache Valley Electric Crew Start Time: 0:00 Crew Stop Time: Tot Hrs mns: 23:59 FCR Start Time: FCR Stop Time: Tot Hrs mns: Use military time format 00:00 **WEATHER CONDITIONS:** Partly Cloudy - 29 degrees in AM, 60 degrees in the PM DESCRIPTION: (work performed, general comments, instructions to contractor, # of crew members onsite.) R&R set up four monitdors. CVE Line crew set the 138 kV CBs on the pads (legs and anchors have not been installed), completed erection of the structural steel and installed nine isulators in the west bay. CVE fab crew placed 200 cyds of FTB over the 46 kV duct bank, including the north end of the 46 kV yaults where the old conduit ties into the yaults. This will allow CVE to initiate the 46 kV cable pull on Wednesday to be followed by the splicing of the cables. Newman supported the placement of FTB and backfilled along the east side of the 46 kV vaults Newman also placed additional material in the excayation over the 46 kV duct bank. STR is continuing the processing of Xfmr #1, with cold trap tests last night at 2000 hours of 9 oz., at 2400 hours of 5 oz., and at 0400 hours at 3 oz. Test at 0800 hours yielded a 2+ result, so STI will now continue the vacuum process with additional tests at 1200 hours (1+) and 1600 hours (1). They will now continue pulling vacuum through the night tonight and start processing oil in the morning. Ron Olieken came on last night at 1900 and I relieved him at 0700. Ron will return again this evening at 1900 hours and work with STR through the night. CVE Fab Crew = 5, CVE Line Crew = 5, Newman = 4. STR = 4, R&R = 1, Wilding = 1. IF WORKING IN ENERGIZED SUBSTATION: Dispatcher login, name and time: Dispatcher knows we are here until further notified Dispatcher logout, name and time: DISCREPANCIES: IMMEDIATE CORRECTIVE ACTION TAKEN: 3/2 - Two aux relays missing from Pederson Switchgear. Pederson has confirmed that aux relays will be shipped on 3/23. 11/30 - Identified an additional retaining wall that is below grade and does not show on the Will excavate to determine dimensions. 12/15 - Excavated to locate the 46 kV cables exiting the west side of the yard. Dug 8' and Sent e-mail to Roger F. didn't find them. Will try again. Actual deoth will be much deeper than design of new bank DELAYS OR LOST TIME ENCOUNTERED: EQUIPMENT (working, delivered, idle):

CVE fab crew: Portable toilet (3), forklift, 1 dumpster, office trailer, conex, exclusion zone conex, (2), tool trailer, crew truck. CVE Line Crew: Pickup (2), boom truck, JLG (2), tool trailer. Newman: trachoe (4), loader, bobcat, mini-ex (2), water truck, compactor, backhoe. STR = crew truck, tool trailer, boom truck, processing trailer, generator.

OSHA Recordable Safety Incidents: Reported by: Time:



PACIFICORP OPERATIONS - Field Construction Representative Daily Log Third West Sub - Rebuild DATE: Wednesday, March 21, 2012 PROJECT NAME: 3000078050 / 10035803 PO & Work Order NO. : MAIN CONTRACTOR: Cache Valley Electric 0:00 Crew Start Time: Crew Stop Time: 19:15 Tot Hrs mns: 19:25 FCR Start Time: 0:00 FCR Stop Time: Tot Hrs mns: 19:25 Use military time format 00:00 **WEATHER CONDITIONS:** Partly Cloudy - 35 degrees in AM. DESCRIPTION: (work performed, general comments, instructions to contractor, # of crew members onsite.) R&R set up four monitors. CVE Line Crew #1 installed bus supports and hung bus in the center and west bays. CVE Line Crew #2 set up pull 46 kV cables from vaults to the getaways in the old 46 kV yard. Had to ring out the cables from West Temple to verify phasing and pulled extra cable on West Temple Circuit #1 to allow for splicing in the vault out in 100 South. CVE Fab Crew is off-site today. Newman is backfilling over the 46 kV duct bank and cleaned up the parking lot east of the 46 kV vaults. Parking lot is back to useable condition. pulled vacuum last night and at 0800 hours started processing oil into Xfmr #1. They are also perfonning testing on Xfmr #2. Completed filling of Xfmr #1 at about 1600 and started cleaning up hoses, generator, etc. Inspector, Ron Olieken worked during the night, until 0700 hours. CVE Line Crew #1 = 5, CVE Line Crew #2 = 5, CVE Fab Crew = 0, Newman = 4, STR = 4, R&R = 1, Wilding = 1. IF WORKING IN ENERGIZED SUBSTATION: Notified dispatcher on Monday we will be 24/7 until further notice Dispatcher login, name and time: Dispatcher logout, name and time: Ken Barto - 1949 IMMEDIATE CORRECTIVE ACTION TAKEN: DISCREPANCIES: 3/2 - Two aux relays missing from Pederson Switchgear. Pederson has confirmed that aux relays will be shipped on 3/23. 11/30 - Identified an additional retaining wall that is below grade and does not show on the | Will excavate to determine dimensions. 12/15 - Excavated to locate the 46 kV cables exiting the west side of the yard. Dug 8' and Sent e-mail to Roger F. didn't find them. Will try again. Actual deoth will be much deeper than design of new bank **DELAYS OR LOST TIME ENCOUNTERED:**

EQUIPMENT (working, delivered, idle):

CVE fab crew: Portable tojlet (3), forklift, 1 dumpster, office trailer, conex, exclusion zone conex, (2), tool trailer, crew truck. CVE Line Crew #1: Pickup (2) boom truck, JLG (2), tool trailer. Line Crew #2: Crew truck, bucket truck, boom truck, wire truck. Newman: trachoe (4), loader, bobcat, mini-ex (2), water truck, compactor, backhoe. STR = crew truck, tool trailer, boom truck, processing trailer, generator.

OSHA Recordable Safety Incidents:	 Reported by:	Time:

Rocky Mountain Power

Russ Johnson

Field Construction Representative

PACIFICORP OPERATIONS - Field Construction Representative Daily Log PROJECT NAME: Third West Sub - Rebuild DATE: Thursday, March 22, 2012 PO & Work Order NO.: 3000078050 / 10035803 MAIN CONTRACTOR: Cache Valley Electric Crew Start Time: 6:50 Crew Stop Time: 19:05 Tot Hrs mns: 12:15 6:34 19:10 FCR Start Time: FCR Stop Time: Tot Hrs mns: 12:36 Use military time format 00:00 **WEATHER CONDITIONS:** Sunny - 40 degrees in AM, 70 degrees in PM DESCRIPTION: (work performed, general comments, instructions to contractor, # of crew members onsite.) R&R set up four monitors. CVE Line Crew #1 insulator assemblies in the center and west bays and welding aluminum bus and expansion bus supports in the center and west bays. They hauled in the remainder of the 138 kV switches and placed them in the yard. CVE Line Crew #2 pulled in the second 46 kV circuit and also pulled the initial circuit out to the vault in 100 South, where it will be spliced. They also pulled out the old cable that ran from the 100 South vault, into the new 46 kV vaults. CVE Fab Crew installed grounding on the north side o the switchgear. All welds passed inspection. Newman placed a lift of backfill in the area over the 46 kV duct bank and also one lift along the north side of the switchgear, over the grounding. STR installed pressure relief tubing on both Xfmrs, did some touchup painting, performed testing and started demobing hoses and equipment. CVE Line Crew #1 = 5, CVE Line Crew #2 = 5, CVE Fab Crew = 2, Newman = 3, STR = 4, R&R = 1, Wilding = 1. IF WORKING IN ENERGIZED SUBSTATION: Dispatcher login, name and time: Jim Batt - 0634 Dispatcher logout, name and time: Ken Barto 1713 DISCREPANCIES: IMMEDIATE CORRECTIVE ACTION TAKEN: 3/2 - Two aux relays missing from Pederson Switchgear. Pederson has confirmed that aux relays will be shipped on 3/23. 11/30 - Identified an additional retaining wall that is below grade and does not show on the Will excavate to determine dimensions. 12/15 - Excavated to locate the 46 kV cables exiting the west side of the yard. Dug 8' and Sent e-mail to Roger F. didn't find them. Will try again. Actual depth will be much deeper than design of new bank **DELAYS OR LOST TIME ENCOUNTERED:**

EQUIPMENT (working, delivered, idle):

CVE fab crew: Portable toilet (3), forklift, 1 dumpster, office trailer, conex, exclusion zone conex, (2), tool trailer, crew truck. CVE Line Crew: Pickup (2), boom truck, JLG (2), tool trailer. Newman: trachoe (4), loader, bobcat, mini-ex (2), water truck, compactor, backhoe. STR = crew truck, tool trailer, boom tmck, processing trailer, generator.

OSHA Recordable Safety Incidents: Reported by: Time:

Rocky Mountain Power

Field Construction Representative

PACIFICORP OPERATIONS - Field Construction Representative Daily Log

PROJECT NAME:	Third West S	Sub - Rebuild	DATE :	2012		
PO & Work Order NO. :	3000078050) / 10035803	MAIN CONTR	RACTOR :	Cache Valle	ey Electric
Crew Start Time;	6:50	Crew Stop Time:	17:30		Tot Hrs mns:	10:40
FCR Start Time:	6:47	FCR Stop Time:	17:35		Tot Hrs mns:	10:48
Use military time format 00:00		. 51(5.55 1	17.00	" "	, 000000	10.10
WEATHER CONDITIONS:		Common EE door			224	
WEATHER CONDITIONS:		Sunny - 55 degr	ees in AM, 70 de	grees in F	~1VI	
DESCRIPTION: (work perform R&R set up four monitors. CVE Line						
installed switches include 140A, 141, not on site today. CVE Fab Crew groompacted and tested. They placed do the splicing next week. STR cont and LV arrestors on Xfmr #1. Kevir PVC and bare copper. He also discuthis was to be done. STR replaced Line Crew #1 = 5, CVE Une Crew #	outed foundations rings and covers inued testing, did restone came ussed installing ne the steel conduits	Newman placed another li over the 46 kV vaults and sy touch-up painting, fabricated by and suggested that the rew arrestors at the 46 kV ten for the X0 bushing neutral v	ft of backfill in the a pread the ABC mat I brackets for grountigid pipe and the in mination locations. with PVC and place	area over the terial to pro- nding and insulated 4/0 Mike Shered 4/0 bare	ne 46 kV duct b vide access for nstalled ground copper be cha pherd later confi copper in the ca	ank, the crew to ling on the HV anged out to irmed that
IF WORKING IN ENERGIZED S	UBSTATION:					
Dispatcher login, name and time:	Jim Batt 0647					
Dispatcher logout, name and time:	Al Swinski 1732	2				
DISCREPANCIES:			IMMEDIATE CO	RRECTIV	E ACTION TA	AKEN:
3/2 - Two aux relays missing from Peders	son Switchgear.		Pederson has confire	med that aux	relays will be shi	pped on 3/23.
3/23 - Still waiting for the second CT term	ninal block from Hyu		Confirmed with Ken I this vet.	Foster on 3/2	22 that RMP has i	not received
11/30 - identified an additional retaining vincemo Plan.			Will excavate to dete	ermine dimen	nsions.	
12/15 - Excavated to locate the 46 kV cal didn't find them. Will try again. Actual de			Sent e-mail to Roger	· F.		
DELAYS OR LOST TIME ENCO	UNTERED:	·				
EQUIPMENT (working, delivere	• ed, idle):					
CVE fab crew: Portable toilet (3), forklift, boom truck, JLG (2), tool trailer. Newma truck, processing trailer, generator.	1 dumpster, office t					
OSHA Recordable Safety Incid	ents:	•	F	Reported	by:	Time:

Rocky Mountain Power

Russ Johnson

Field Construction Representative

PROJECT NAME: Third West Sub - Rebuild DATE: Saturday, March 24, 2012 Work Order NO.: 3000078050 / 10035803 MAIN CONTRACTOR: Cache Valley Electors Start Time: 7:55 Crew Stop Time: 17:25 Tot Hrs mns: 9:30 FCR Start Time: 7:50 FCR Stop Time: 17:30 Tot Hrs mns: 9:40

PO & Work Order NO. :	30000	78050 / 10035803	MAIN CONTRACTOR	: Cache Valley	Electric
Crew Start Time:	7:55	Crew.Stop Time:	17:25	Tot Hrs mns:	9:30
FCR Start Time:	7:50	FCR Stop Time:	17:30	Tot Hrs mns:	9:40
Use military time format 00:00	7.00	— Tok Grop time.	17.50	100111311113.	3.40
ose mintary time format 00.00		`			
WEATHER CONDITIONS:		S unn y - 57 de g	rees in AM , 70 degrees in l	PM	
DESCRIPTION: (work perfo	rmed, gener	al comments, instructions to	contractor, # of crew me	embers onsite.)	
No monitors were set up today as completed their work. STR equip	S STR is the on ment was left of	oly contractor on site. STR continuon site and they will demobe from ewrnan = 0, STR = 3, R&R = 0,	ues to perform testing, cleaning the site on Monday morning.	g, and paint touch	
	•				
IF WORKING IN ENERGIZED	SUBSTATIO	ON:			
Dispatcher login, name and time:	Val Chris	stensen 070 0			
Dispatcher logout, name and time	e: Val Chri	stensen1725			-
DISCREPANCIES:		 	IMMEDIATE CORRECTIV	/E ACTION TAI	KEN:
3/2 - Two aux relays missing from Pe	derson Switchge	ear.	Pederson has confirmed that aux	k relays will be shipp	oed on 3/23.
3/23 - Still waiting for the second CT	terminal block fro	om Hyundai	Confirmed with Ken Foster on 3/ this yet.	22 that RM P has no	t received
11/30 - Identified an additional retain	ng wall that is be	elow grade and does not show on the	Will excavate to determine dimer	nsions.	
12/15 - Excavated to locate the 46 k\		he west side of the yard. Dug 8' and nuch deeper than design of new bank	Sent e-mail to Roger F.		
DELAYS OR LOST TIME EN					
			·	,	
		•			
EQUIPMENT (working, deliv	/ered, idle):	•	·		:
		office trailer, conex, exclusion zone of	conex, (2), tool trailer, crew truck.	CVE Line Crew: P	ickup (2),
truck, processing trailer, generator.	vman: trachoe (4	4), loader, bobcat, mini-ex (2), water tr	uck, compactor, backhoe. ST R =	crew truck, tool trai	ler, boom
OSHA Recordable Safety In	cidents:		Reported	by: T	ime:

Rocky Mountain Power

Russ Johnson

Field Construction Representative



March 21, 2012

Laboratory Code:

RES

Subcontract Number: Laboratory Report:

NA

Project # / P.O. #

RES 232029-1 None **G**iven

Project Description:

3rd West Sub - RMP

Eldon Romney R & R Environmental 47 West 9000 South #2 Sandy UT 84070

Dear Customer,

Reservoirs Environmental, Inc. is an analytical laboratory accredited for the analysis of Industrial Hygiene and Environmental matrices by the National Voluntary Laboratory Accreditation Program (NVLAP), Lab Code 101896-0 for Transmission Electron Microscopy (TEM) and Polarized Light Microscopy (PLM) analysis and the American industrial Hygiene Association (AIHA), Lab ID 101533 - Accreditation Certificate #480 for Phase Contrast Microscopy (PCM) analysis. This laboratory is currently proficient in both Proficiency Testing and PAT programs respectively.

Reservoirs Environmental, Inc. has analyzed the following samples for asbestos content as per your request. The analysis has been completed in general accordance with the appropriate methodology as stated in the attached analysis table. The results have been submitted to your office.

RES 232029-1 is the job number assigned to this study. This report is considered highly confidential and the sole property of the customer. Reservoirs Environmental, Inc. will not discuss any part of this study with personnel other than those of the client. The results described in this report only apply to the samples analyzed. This report must not be used to claim endorsement of products or analytical results by NVLAP or any agency of the U.S. Government. This report shall not be reproduced except in full, without written approval from Reservoirs Environmental, Inc. Samples will be disposed of after sixty days unless longer storage is requested. If you have any questions about this report, please feel free to call 303-964-1986.

Sincerely,

Jeanne Spencer Orr

President

RESERVOIRS ENVIRONMENTAL, INC.

NVLAP Lab Code 101896-0; TDH: #30-0015

TABLE I. TEM AIR FILTER SAMPLE DATA AND ANALYTICAL RESULTS

RES Job Number:

RES 232029-1

Client:

R & R Environmental

Client Project Number / P.O.:

None Given

Client Project Description:

3rd West Sub - RMP

Date Samples Received:

March 20, 2012

Analysis Type:

TEM, AHERA

Turnaround:

24 Hour

Date Samples Analyzed:

March 21, 2012

Client	Lab		Area	Air	Number of	Analytical	Asbestos	Filter
ID Number	, ID Ni	ID Number Ana		Volume Sampled	Asbestos Structures Detected	Sensitivity	Concentration	Loading
			(mm²)	(L)		(s/cc)	(s/cc)	(s/mm²)
3W-031912 W	EM	873290	0.0900	873	ND	0.0049	BAS	BAS
3W-031912 N	EM	873291	0.0900	873	ND	0.0049	BAS	BAS
3W-031912 E	EM	873292	0.0900	873	ND	0.0049	BAS	BAS
3W-031912 S	. EM	873293	0.0900	873	ND	0.0049	BAS	BAS

NA = Not Analyzed

ND = None Detected

BAS = Below Analytical Sensitivity

Average Grid Opening in mm² = 0.010

Filter Material = Mixed Cellulose Ester

Filter Diameter = 25 mm Effective Filter Area = 385 sq mm

Ellerman, C = Q = Rassenoli Environmenta inc.;
Dete: 2012.03

DATA QA

Due Date: 3-21-12 Due Time:__

REILAB RESERVOITS ENVIronmental, Inc. 8801 Logan St. Denvar, CO 80218 - Pix 303 984-1986 - Fax 303-477-4276 - Toli Fras :866 RESI-ENV

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Number of samples received: (Additional samples shall be listed on attached lor g form.) NOTE: REI will analyze incoming camples beed upon information received and will not be responsible for errors or ormissions in calculations resulting from the inaccuracy of original data. By signing client/company representative agrees that submission of the following samples for requested enclysts as indicated on this Chain of Custody shall constitute agreement with payment tenns of NET 30 days, failure to comply with payment terms may resylt in a 1.5% monthly interest auricharge. Relinquished By: Date/Time: 3 1917 Sample Condition: On Ice Sealed Intact Laboratory Use Only Tamp. (F°) Yes / No Yes / No Yes / No Yes / No Received By: Results: Contact Phone Email Fax Date Time Initials Contact Phone Email Fax Date Time Initials	9	· · · · · · · · · · · · · · · · · · ·						7		7	1	\square	1	17			T							
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Relinquished By: Laboratory Use Only Received By: Contact Tamp. (F°) Date/Time: 3250/2 C S Carrier: Contact Thone Email Fax Date Time Initials Contact Phone Email Fax Date Time Initials Contact Date/Time: 3/26/2 C S S Carrier: Date/Time: 3/26/2 C S S S S Carrier: Date/Time: 3/26/2 C S S S S Carrier: Date/Time: 3/26/2 C S S S S S S S S S S S S S S S S S S	NOTE: REI will analyzo incoming camples based upon information received and will not be in	respons≤ for errors or omfssions in c	alculat	dons res	ufling f	from ti	he inacou										e agre	es that	i submi:	ssion of t	ha following sar	aples for re	quested	
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	Contact Phone Email Fax Date	Time Initi	als	Co	ontact				hone	En	ail i	Fax				Date				Time)	Initi	als	

Thereof # 703 5553 6473 7-2011_version 1

Attachment I

Key to Count Sheets Count Sheets Analytical Procedures

Structures identifications consist of an Asbestos Type followed by a Structure Type

Asbestos Type

Structure Types

Α	=	Amosite	F =	Fiber
		Anthophyllite	-	Bundle
				Cluster
Cr	=	Crocidolite	M =	Matrix
T	=	Tremolite		

ND = no structures detected

M = other structure associated with a matrix

NAM = Non Asbestos Mineral

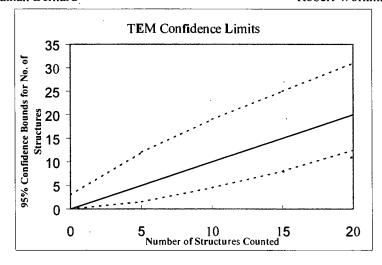
XGB = partly obscured by a grid bar

Sizing Conversion
1 length unit = 5 mm on screen = 0.278 micron
1.80 length units = 0.5 micron
18.0 length units = 5 microns

1 width unit = 1 mm on screen = 0.0556 micron

TEM Analysts

Jeanne S. Orr Nathan DelHierro Angela Heitger Jonathan Bernard Paul D. LoScalzo Mark Steiner Norberto Zimbleman Robert Workman



Upper and lower 95% confidence bounds for the number of structures counted assuming a Poisson distribution.

Reservoirs Environmental, Inc. TEM Asbestos Structure Count

Laboratory name:	REI
Instrument	JEOL 100 CX NS
Voltage (KV)	100 KV
Magnification	20KX 10KX
Grid ocenina area (mm2)	0.01
Scale: 1L =	0.28 um
Scale: 1D =	0.056 um
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	
QA Type	

Client :	RHR
Sample Tyoe (A=Air, D=Duat):	A
Air yolume (L) or dust area (cm2)	873
Oate received by lab	3/20/12
Lab Job Number:	232029
Lab Sample Number:	873290

Fraction of primary filter used		
Total Resuspension Volume (ml)		
Volume Applied to secondary filter (ml)	<u> </u>	

Analyzed by	JB
Analysis date	3/21/12
Method (D=Direct, I=Indirecf, IA=Indirect, ashed)	P
Counting rules (ISO, AHERA, ASTM)	ΑH
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

Grid	Grid Opening	Stmcture	No. of Str	uctures	Dimer	nsions	Identification	Mineral Class				1 = y	es, blank	= no
GIN	Gra Opening	Туре	Primary	Total	Length	Width	Identinoation	Amphibole	С	NAM	Sketch/Comments	Sketch	Photo	EDS
A	K4-1	ND											·	
	H4-1	MD			Por	Å	80%	in fact		3/2 de	bus			
	64-1	ND			Pug	B	70 %	unbut		5% d	elons			
	F4-1	ND			٧٦			· ·						
	E4-1	ND					13	3/21/12			,			
B	F3-4	ND					//	/ / .					,	
	F3-4	~ ₪			`	· .								L <u>.</u>
	C3-4	ND												
	B3-4	ŒW												
		-												

Reservoirs Environmental, Inc. - TEM Asbestos Structure Count

Laboratory name:	REI
instrument	JEOL 100 CX N/S
Voltage (KV)	100 KV
Magnification	20KX) 10KX
Grid opening area (mm2)	0.01
Scale: 1L =	0.28 um
Scale: 1D =	0.056 um
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	,
QA Tyoe	

Client:	R+R
Sample Type (A≃Air, D≃Dust):	A
Air volume (L) or dust area (cni2)	873
Oate received by lab	3/20/12
Lab Job Number:	232029
Lab Sample Number:	873291

F-Factor Calculation (Indirect Preps Only):					
Fraction of primary filter used	1				
Total Resuspension Volume (ml)					
Volume Applied to Secondary filter (ml)					

Analyzed by	<i>J</i> B
Analysis date	3/21/12
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	D
Counting rules (ISO, AHERA, ASTM)	AH
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

Grid	Grid Opening	Structure	No. of Str	uctures	Dimer	nsions	Identification	Mineral Class				1 = ye	es, blank	= no
O.I.u	Ond Operang	Туре	Primary	Total	Length	Widttı	ta di tationa di di	Amphibole	С	NAM	Sketch/Comments	Sketch	Photo	EDS
A	62-3	ND								<u> </u>	,			
	F2-3	ND			Pn	n A	60	how tun	6	5h	delons			
·	E3-4	M			Rue	B	80%	how try	ζ.	50/0	debus			
	C3-6	ND			, v		,	· 		·			 	
	C4-6	ND				l		1B 3/2	1/12					
B	H4-6	ND		·				/ 7	/					
	Ca4-6	MD_												L
	F4-6	ND												
	E4-6	ND												

Raservolis Environmental, Inc. - TEM Asbestos Structure Count

Laboratory name:	REI
Instrument	JEOL 100 CX N/S
Voltage (KV)	100 KV
Magnification	20KX IOKX
Grid opening area (mm2)	0.01
Scale: 1L =	0.28 um
Scale: 1D =	0.056 um
Primary lilter area (mm2)	385
Secondary Filter Area (mm2)	
QA Type	

Client :	(2.	R
Sample Type (A=Air, D=Oust):		A	
Air volume (L) or dust area (cm2)	۶	17	3
Date received by lab	3	20	t_
Lab Job Number:	2	320	224
Lab Sample Number:	8	73	292

Analyzed by	JB
Analysis date	3/21/12
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	D
Counting rules (ISO, AHERA, ASTM)	AH
Grid storaga location	Month Analyzed
Scope Alignment	Oate Analyzed

F-Factor Calculation (Indirect Preps	Only):
Fraction of primary filter used	
Total Resuspension Volume (ml)	
Volume Applied to secondary filter (ml)	

Grid	Grid Opening	Stnicture	No. of Str	uctures	Dime	nsions	Identification	Mineral Class				1 = y	es, blank	= no
Gila	Grid Opening	Туре	Primary	Total	Length	Width	Identification	Amphibole	С	NAM	Sketch/Comments	Sketch	Photo	EDS
A	45-1	QD.												
	(15-1	ND			Pin	Aq	Ba	80% in	Lu 1	<i>p</i> .	5% del	rus		
	F5,-1	MD			, - ,				6					
	E5-1	√ D		·				1	3/	21/12				
<u> </u>	F3-10	ND								/				
B	(95-1	M					-		<u> </u>			L		
	F5-1	M												
	E5-1	イグ			<u> </u>									
	C5-1	ND				•								
		-												

Reservoirs Environmental, tnc. - TEM Asbestos Structure Count

Laboratory name:	REI
Instrument	JEOL 100 CX N/S
Voltage (KV)	100 KV
Magnification	20KX 10KX
Grid opening area (mm2)	0.01
Scale: 1L =	0.28 um
Scale: 1D =	0.056 um
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	
QA Type	

Client:		24	R
Samole Type (A=Air, D=Dust):		A	
Air volume (L) or dust area (cm2)		4	73
Date received by lab	3	20	12
Lab Job Number:	2	3 20	24
Lab Sample Number:	8	73	293

F-Factor Calculation (Indirect Preps Only):							
Fraction of primary filter used							
Total Resuspension Volume (ml)							
Volume Applied to secondary filter (ml)							

Analyzed by	JB
Analysis date	3/21/12
Method (D=Direct, I=Indlrect, IA=Indirect, ashed)	P
Counting rules (ISO, AHERA, ASTM)	AH .
Grid storage location	Month Analyzed
Scope Alignment	Oate Analyzed

Grid	Grid Opening	Structure	No. of Str	mctures	Dime	nsions	Identification	Mineral Class				1 = y	= no	
51.0	Cho Opening	Туре	Primary	Total	Length	WMth	Tochtineation	Amphibole	C NAM		Sketch/Comments	Sketch	Photo	EDS
A	H3-6	ND												
	636	ND			Pins	DA	80, h	in funt	4	The de	bes	·		
	F3-6	ND			Par	B	NA.	/						
	E3-6	ND						A 3/21	12					
	C3-10	ND		·			7	7 1						
13	64-3	ND					/ .							
	F4-3	ر ح ح			,									
	E4-3	3												
	C4-3	ΔN										·		
										,				

Analytical Procedures - AHERA

Transmission electron microscopy/energy dispersive X-ray spectrometry/selected area electron diffraction (TEM/EDX/SAED) was employed in the analysis of the samples, which were collected on 25 mm mixed cellulose ester air filters. A portion of each filter was collapsed with acetone and etched in a plasma asher. The etched filter was then coated with a thin layer of carbon in a carbon side down. The sample was then placed inside a condensation washer and treated with acetone to remove the filter matrix and expose any inert material.

For each sample, enough grid openings on a 200 mesh TEM grid are analyzed to ensure an analytical sensitivity of at least 0.005 structures/cc. A minimum of four grid openings from two preparations are analyzed for each sample. The grid openings are searched for fibrous structures which, if present are analyzed by SAED and/or EDX (elemental analysis). The AHERA protocol requires SAED confirmation of enough chrysotile asbestos structures on each sample to cause the sample to exceed 70 structures/mm² (usually 4 or 5 structures). Both SAED and EDX confirmation are required of enough amphibole structures on each sample to cause the sample to exceed 70 structures/mm² (usually 4 or 5 structures) per sample. Either SAED or EDX is required for the remaining asbestos structures of either type. The morphology of each structure is determined and the length and the diameter of any asbestos structures are recorded. Asbestos fibers, bundles, cluster and matrices were identified and recorded. The asbestos structures have been defined in AHERA as follows:

Fiber: is a structure having a minimum length greater than or equal to 0.5

micron with an aspect ratio of 5:1 or greater with substantially parallel

sides.

Bundle: is a structure composed of three or more fibers in parallel arrangement,

with each fiber closer than the diameter of one fiber.

Cluster: is a structure with fibers in random arrangements such that all fibers are

intermixed and no single fiber is isolated from the group.

Matrix: is a fiber or fibers with one end free and the other end embedded or

hidden by a particulate. The exposed fiber end must meet the fiber

definition given above.

If more than 50 asbestos structures are identified and confirmed on a sample, AHERA analysis may be terminated after completion of the grid opening, which contains the 50th structure. AHERA protocol requires the laboratory to reject any clearance sample which contains in excess of 25% total particulate loading or which appears to be unevenly loaded.

The AHERA protocol includes specific sampling requirements, including minimum numbers of samples and minimum air volumes. Specifically, the 70 structures/mm² clearance criteria is only allowed for sets five inside samples (collected in a group of 13 samples including: five outsides and three blanks) with volumes greater than 1200 liters (40 CFR Part 763, page 41894). Deviation from the AHERA sampling protocol may affect the validity of the analytical results. Analysis of samples collected by non-protocol methods are not accredited by NVLAP

Equations Used for Calculations

Area Analyzed, mm² = # GO counted x Average GO Area (mm)

Concentration, $s/cc = \frac{\text{\# Asbestos Structures}}{\text{\# GO Counted}} \times \frac{1}{\text{Volume (L)}} \times \frac{\text{Eff. Filter Area (mm}^2)}{\text{Average GO area (mm}^2)} \times \frac{1L}{1000cc}$

Filter loading, s/mm² = # Asbestos structures Area Analyzed (mm²)

GO = TEM grid opening



March 22, 2012

Laboratory Code:

RES

Subcontract Number:

NA

Laboratory Report: Project # / P.O. #

RES 232136-1 None **G**iven

Project Description:

3rd West Sub - RIVIP

David Roskelley R & R Environmental 47 West 9000 South #2 Sandy UT 84070

Dear Customer,

Reservoirs Environmental, Inc. is an analytical laboratory accredited for the analysis of Industrial Hygiene and Environmental matrices by the National Voluntary Laboratory Accreditation Program (NVLAP), Lab Code 101896-0 for Transmission Electron Microscopy (TEM) and Polarized Light Microscopy (PLM) analysis and the American Industrial Hygiene Association (AIHA), Lab ID 101533 - Accreditation Certificate #480 for Phase Contrast Microscopy (PCM) analysis. This laboratory is currently proficient in both Proficiency Testing and PAT programs respectively.

Reservoirs Environmental, Inc. has analyzed the following samples for asbestos content as per your request. The analysis has been completed in general accordance with the appropriate methodology as stated in the attached analysis table. The results have been submitted to your office.

RES 232136-1 is the job number assigned to this study. This report is considered highly confidential and the sole property of the customer. Reservoirs Environmental, Inc. will not discuss any part of this study with personnel other than those of the client. The results described in this report only apply to the samples analyzed. This report must not be used to claim endorsement of products or analytical results by NVLAP or any agency of the U.S. Government. This report shall not be reproduced except in full, without written approval from Reservoirs Environmental, Inc. Samples will be disposed of after sixty days unless longer storage is requested. If you have any questions about this report, please feel free to call 303-964-1986.

Sincerely.

Jeanne Spencer Orr

President

RESERVOIRS ENVIRONMENTAL, INC.

NVLAP Lab Code 101896-0; TDH: #30-0015

TABLE I. TEM AIR FILTER SAMPLE DATA AND ANALYTICAL RESULTS

RES Job Number:

RES 232136-1

Client:

R & R Environmental

Client Project Number / P.O.:

None Given

Client Project Description: Date Samples Received:

3rd West Sub - RMP

March 21, 2012

Analysis Type:

TEM, AHERA

Turnaround:

24 Hour

Date Samples Analyzed:

March 22, 2012

Client	Lab		Area	Air	Number of	Analytical	Asbestos	Filter
ID Number	ID N	umber	Analyzed	Volume Sampled	Asbestos Structures Detected	Sensitivity	Concentration	Loading
			(mm²)	(L)		(s/cc)	(s/cc)	(s/mm²)
3W-032012 W	EM	873443	0.0900	907	ND	0.0047	BAS	BAS
3W-032012 N	EM	87 3 444	0.0900	907	ND	0.0047	BAS	BAS
3W-032012 E	EM	87 3 445	0.0900	907	ND	0.0047	BAS	BAS
3W-032012 S	EM	87 3446	0.0900	907	ND	0.0047	BAS	BAS

NA = Not Analyzed

Filter Material = Mixed Cellulose Ester

ND = None Detected

Filter Diameter = 25 mm

BAS = Below Analytical Sensitivity
Average Grid Opening in mm² = 0.010

Effective Filter Area = 385 sq mm

Due Date: 3 . 22 \ Z Due Time: 905

RES 232136

		INVOICE TO: (IF DI	FFER	ENT))			_				(CONTAC	T IN	IFOR	MAT	ION:	•	
Company: R	er Emigrapal	Compeny:						rtact:	()au	2	20	elle	4			Conta				
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	(Rush PCM = 2hr, TEM = \$hr.)		_	-	1						11	1	1		Dust				aint = P	
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Organics	24 hr. 3 day S Day	turnerounds.**	Point Count	*			Metals			ES (S)	ΙΙ.		NOTES	*AS	TM E1				media only**	
MICROBI	OLOGY LABORATORY HOURS: Weekdays: 9am -	Sptn	٦٢	1 = 3	3					ð	ا ا	Quantification	8 H			Π				1
	7:H7, Colifonns, S.sureus 24 hr 2 Da	ay3-5 Day		7402,	OSHA AHSO		- Analyte(s) TCLP, Welding Fume,			5	Catio	퉏	, Identification, Qui				ı		Í	
	a, Listeria, E.coli, APC, Y & M 48 Hr3-5	Day ·	Long	ة أِنْ إِنْ	- 1 -		E			7	Quantificat	8	\$ 8			1	ı			
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Α	=	Amosite	F =	Fiber
		Anthophyllite	-	Bundle
		Chrysotile		Cluster
		Crocidolite		Matrix
-		Tremolite	141	Manix

ND = no structures detected

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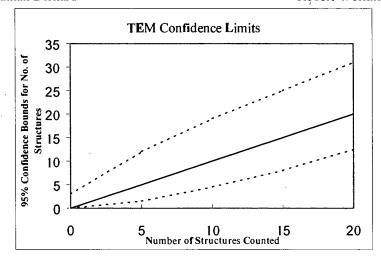
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Upper and lower 95% confidence bounds for the number of structures counted assuming a Poisson distribution.

Reservoirs Envtronmentai, Inc. TEM Asbestos Structure Count

Laboratory name:	REI
Instrument	JEOL 100 CX/N S
Voltage (KV)	100 KV
Magnification	/20KX) 10KX
Grid opening area (mm2)	0.01
Scale: 1L=	0.28 um
Scale: 1D =	0.056 um
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	
QA Type	

KUK
A
907
3/21/12
232136
823443

Analyzed by	JB
Analysis date	3/22/12
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	D/-
Counting rules (ISO, AHERA, ASTM)	Alt
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

F-Factor Calculation (Indirect Preps Only):					
Fraction of primary filter used					
Total Resuspension Volume (ml)					
Volume Applied to secondary filter (ml)					

Grid	Grid Opening	Structure	No. of Str	uctures	Dime	nsions	Identification	Mineral Class	,]	1 = y	es, blank	= no
GIIG		Туре	Primary	Total	Length	Width	dentinoation	Amphibole	С	NAM	Sketch/Comments	Sketch	Photo	EDS
A	K3-3	ND												
	H3-3	ND				Q.	A	70 / 1 +	mt	5	- 7% de lan	<u>ب</u>		
	693-3	D				Pup	BNA	/_/_	-					
	F3-3	ND				0-		1 120/2						
	C3-3	ND					7	P 1-41-						
B	K3-6	ND			·		//							
•	H3-6	MD											·	
	613-6	ND								<u></u>				
	F3-6	$Q_{\mathcal{N}}$												
`											·			

Reservoirs Environmental, Inc. TEM Asbestos Structure Count

Laboratory name:	REI
Instrument	JEOL 100 CX/Ni S
Voltage (KV)	100 KV
Magnification	/2010X) 10KX
Grid opening area (mm2)	0.01
Scale: 1L=	0.28 um
Scale: 10 =	0.056 um
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	
QA Type	

A
907
121/12
32136
23444

Analyzed by	TB
Analysis date	3/22/2
Method (D=Dlrect, l=Indirect, IA=Indirect, ashed)	D
Counting rules (ISO, AHERA, ASTM)	Alt
Grid storage location	Month Analyzed
Scope Alignment	Oate Analyzed

F-Factor Calculation (Indirect Preps Only):					
Fraction of primary filter used					
Total Resuspension Volume (mi)					
Voluma Applied to secondary filter (mi)					

Grid	Grid Opening	Strature	No. of Str	No. of Structures		nsions	Identification	Mineral Class	····			1 = ye	es, blank	= no
		Туре	Primary	Total	Length	Width	idorianodaon	Amphibote	С	NAM	Sketci //Comments	Sketch	Photo	EDS
A	E4-1	NI2												
	C4-1	WX)			Por	5 A	60	Winter	7	5-1	o'h de hu	S		
	F5-4	ND			Pur	1. B	70	loca tun	6	5-10	% delsu	5		,
	E5-4	ND					1							
	Flo-)	ND					B.	1/20/12						
B	A4-4	ND					////	7/		, .				
	(44-4	ND												
	F4-4	ND						•					·	
	E4-4	ND		·										

Reservoirs Environmental, Inc. TEM Asbestos Structure Count

Laboratory name:	REI
Instrmment	JEOL 100 CX(R) S
Voltage (KV)	100 KV
Magnification	/20f0x) 10KX
Grid opening area (mm2)	0.01
Scale: 1L=	0.28 um
Scale: 10 =	0.056 um
Primary filter area (mm2) Secondary Filter Area	385
(mm2)	
QA Type	

Client:	Rak
Sample Type (A=Air, D=Dust):	A
Air volume (L) or dust area (cm2)	907
Date received by lab	3/21/12
Lab Job Number:	232136
Lab Sample Number:	873445

F-Factor Calculation (Indirect Preps	Only):
Fraction of primary filter used	
Total Resuspension Volume (mil)	
Voluma Applied to secondary filter (ml)	

Analyzed by	TB.
Analysis data	3/22/12
Method (D=Dlrect, l=Indirect, IA=Indlrect, ashed)	D
Counting mles (ISO, AHERA, ASTM)	Alt
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

Grid	Grid Opening	Stmcture	No. of Str	uctures	Dimer	nsion s	Identification	Mineral Class				1 = ya	s, blank	= no
Ond	ond Opening	Туре	Primary	Total	Length	Width	identiii)dation	Amphibole	С	NAM	Sketcl /Comments	Sketch	Photo	EDS
A	K3-3	ND											·	
	H3-3	ND			Port	A	70	Con hon F		5%	debus			
	64-3	QV			Pup	B	70%	bin frut		ho	lebus			
	14-3	ND			'			/						
	614-3	ND						B 3/	22/1	Z				
B	14-1	WD						/ / /	/					
	H4-1	ND			·		/						•	
	K4-1	MD									·		-	
	624-1	ND						,						

Reservoirs Environmental, tnc. TEM Astrestos Structure Count

Laboratory name:	REI
Instrmment	JEOL 100 CX (T) S
Voltage (KV)	100 KV
Magnification	20KX) 10KX
Grid opening area (mm2)	0.01
Scale: 1L =	0.28 um
Scale: 1D =	0.056 um
Primary fitter area (mm2)	385
Secondary Filter Area (mm2)	
QA Type	-

RAR
À
907
3/21/12
232136
823446

Analyzed by	573
Analysis date	3/22/12
Method (D=Direct, I=Indirect, IA=IndIrect, ashed)	D
Counting miles (ISO, AHERA, ASTM)	Alt
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

F-Factor Calculation (Indirect Preps	Only):
Fraction of primary filter used	
Total Resuspension Volume (mi)	
Volums Applied to secondary filter (mi)	

Grid	Grid Opening	Strature	No. of Str	uctures	Dimen	sions	Identification	Mineral Class				1 = ye	s, blank	= no
Ond	Ond Opening	Туре	Primary	Total	Length	Width	·	Amphibole	С	NAM	Sketcfi/Comments	Sketch	Photo	EDS
A	K3-1	440												
,	15-1	ND			9		70	The in his	i.F	3-	- 5% Jehn	/ ç		
	K5-1	ND		·	Pa	0	60	che in fr	rh.	3~	The Jolan	ے_		
	H5-1	N -				, 			16					
	45-6	ND							5	3/22	12			
B	14-3	ND						. / /		/ /				
	K43	ND						/						
	45-3	M						,						
	K53	~D												

Analytical Procedures - AHERA

Transmission electron microscopy/energy dispersive X-ray spectrometry/selected area electron diffraction (TEM/EDX/SAED) was employed in the analysis of the samples, which were collected on 25 mm mixed cellulose ester air filters. A portion of each filter was collapsed with acetone and etched in a plasma asher. The etched filter was then coated with a thin layer of carbon in a carbon side down. The sample was then placed inside a condensation washer and treated with acetone to remove the filter matrix and expose any inert material.

For each sample, enough grid openings on a 200 mesh TEM grid are analyzed to ensure an analytical sensitivity of at least 0.005 structures/cc. A minimum of four grid openings from two preparations are analyzed for each sample. The grid openings are searched for fibrous structures which, if present are analyzed by SAED and/or EDX (elemental analysis). The AHERA protocol requires SAED confirmation of enough chrysotile asbestos structures on each sample to cause the sample to exceed 70 structures/mm² (usually 4 or 5 structures). Both SAED and EDX confirmation are required of enough amphibole structures on each sample to cause the sample to exceed 70 structures/mm² (usually 4 or 5 structures) per sample. Either SAED or EDX is required for the remaining asbestos structures of either type. The morphology of each structure is determined and the length and the diameter of any asbestos structures are recorded. Asbestos fibers, bundles, cluster and matrices were identified and recorded. The asbestos structures have been defined in AHERA as follows:

Fiber: is a structure having a minimum length greater than or equal to 0.5

micron with an aspect ratio of 5:1 or greater with substantially parallel

sides.

Bundle: is a structure composed of three or more fibers in parallel arrangement,

with each fiber closer than the diameter of one fiber.

Cluster: is a structure with fibers in random arrangements such that all fibers are

intermixed and no single fiber is isolated from the group.

Matrix: is a fiber or fibers with one end free and the other end embedded or

hidden by a particulate. The exposed fiber end must meet the fiber

definition given above.

If more than 50 asbestos structures are identified and confirmed on a sample, AHERA analysis may be terminated after completion of the grid opening, which contains the 50th structure. AHERA protocol requires the laboratory to reject any clearance sample which contains in excess of 25% total particulate loading or which appears to be unevenly loaded.

The AHERA protocol includes specific sampling requirements, including minimum numbers of samples and minimum air volumes. Specifically, the 70 structures/mm² clearance criteria is only allowed for sets five inside samples (collected in a group of 13 samples including: five outsides and three blanks) with volumes greater than 1200 liters (40 CFR Part 763, page 41894). Deviation from the AHERA sampling protocol may affect the validity of the analytical results. Analysis of samples collected by non-protocol methods are not accredited by NVLAP

Equations Used for Calculations

Area Analyzed, $mm^2 = \# GO \text{ counted } x \text{ Average } GO \text{ Area } (mm)$

Concentration, s/cc = #Asbestos Structures x 1 volume (L) Average GO area (mm²) x 1L Volume (L) Average GO area (mm²) 1000cc

Filter loading, s/mm² = # Asbestos structures Area Analyzed (mm²)

GO = TEM grid opening



March 23, 2012

Laboratory Code: Subcontract Number:

RES NA

Laboratory Report: Project # / P.O. #

RES 232199-1 None Given

Project Description:

3rd West Sub - RMP

Eldon Romney R & R Environmental 47 West 9000 South #2 Sandy UT 84070

Dear Customer.

Reservoirs Environmental, Inc. is an analytical laboratory accredited for the analysis of Industrial Hygiene and Environmental matrices by the National Voluntary Laboratory Accreditation Program (NVLAP), Lab Code 101896-0 for Transmission Electron Microscopy (TEM) and Polarized Light Microscopy (PLM) analysis and the American Industrial Hygiene Association (AIHA), Lab ID 101533 - Accreditation Certificate #480 for Phase Contrast Microscopy (PCM) analysis. This laboratory is currently proficient in both Proficiency Testing and PAT programs respectively.

Reservoirs Environmental, Inc. has analyzed the following samples for asbestos content as per your request. The analysis has been completed in general accordance with the appropriate methodology as stated in the attached analysis table. The results have been submitted to your office.

RES 232199-1 is the job number assigned to this study. This report is considered highly confidential and the sole property of the customer. Reservoirs Environmental, Inc. will not discuss any part of this study with personnel other than those of the client. The results described in this report only apply to the samples analyzed. This report must not be used to claim endorsement of products or analytical results by NVLAP or any agency of the U.S. Government. This report shall not be reproduced except in full, without written approval from Reservoirs Environmental, Inc. Samples will be disposed of after sixty days unless longer storage is requested. If you have any questions about this report, please feel free to call 303-964-1986.

Sincerely,

Jeanne Spencer Orr

President

RESERVOIRS ENVIRONMENTAL, INC.

NVLAP Lab Code 101896-0; TDH: #30-0015

TABLE I. TEM AIR FILTER SAMPLE DATA AND ANALYTICAL RESULTS

RES Job Number:

RES 232199-1

Client:

Client Project Number / P.O.:

R & R Environmental None Given

Client Project Description:

3rd West Sub - RMP

Date Samples Received:

Analysis Type:

March 22, 2012

Turnaround:

TEM, AHERA

24 Hour

Date Samples Analyzed:

March 23, 2012

Client ID Number	Lab ID Nu	ımber	Area Analyzed	Air Volume Sampled	Number of Asbestos Structures Detected	Analytical Sensitivity	Asbestos Concentration	Filter Loading
			(mm²)	(L)		(s/cc)	(s/cc)	(s/mm²)
3W-032112 W	EM	87 3 567	0.0900	934	ND	0.0046	BAS	BAS
3W-032112 N	EM	87 3 568	0.0900	934	ND	0.0046	BAS	BAS
3W-032112 E	EM	873569	0.0900	934	ND	0.0046	BAS	BAS
3W-032112 S	EM	873570	0.0900	934	ND	0.0046	BAS	BAS

NA = Not Analyzed

Filter Material = Mixed Cellulose Ester

ND = None Detected

Filter Diameter = 25 mm

Average Grid Opening in mm² = 0.010

BAS = Below Analytical Sensitivity Effective Filter Area = 385 sq mm

DATA QA

Due Date: 3: 23:12 Due Time: \$35a

S801 Logan St. Denver, CO 80216 • Ph: 303 964-1986 • Pax 303-477-4218 • Tod Free :866 RESI-SNV

	INVOICE TO: (IF			NT)									С	ONTAC	T IN		ATION:	L			
Company: R. & R. Environmental	Campeny:					Conte		ave	2	بمإد	elle	×				Contact					
Address: 47 W 90005 #2	Address:					Phon s:									Phone:						
Sundy Ul. Swill		Fax:						Fax: Coll/pager:													
· •	L	Cell/pager: 80 511-1035 Final Oato Delivarable Small Address:																			
Project Number and/or P.O. #:							4														
Project Description/Location 312 West Sub RMP						1_	dave	<u> </u>	Me.	Mi	rO ,(<u>ره،</u>	<u>~</u> _								
ASBESTOS LABORATORY HOURS: Weekdays: 7am - Tpm			:		RE	QUE	STE	AN	IALY	SIS			11111		VAL	ID MA	ATRIX C	OOES	LA	B NOT	ES:
PLM / PCM / (EM RUSH (Samo Day) PRIORITY (Next Day)ST AN DARD	1 1		1 1	1	- {	- }		11			1	1		Air =			Bulk = B			
(Rush PCM * 2hr, TEM = 6lir.)		4			- [- 1								Oust =			Paint = P			
CHEMISTRY LABORATORY HOURS: Weekdays: Sam - 5pm Motal(s) / Dust RUSH 24 hr 3-5 Day		1 1		1	- 1	1 1			11	1	11		1		Soll = vab =			Vipe = W = Food	 		
DCDA 9 / Motolo 9 Wolding	"Prior not/fleation is	1	Quant	1			1	lΙ	8		11	_ ا						Water = WW	 		
Fumo Scan / TCLP RUSH S day 10 day	retjuired for RUSH turnarounds.**	튆	Ç S	i I	- 1	3			[출[1		ş	នួ	D	y ma		= Other	11101 - 1111	1		
Organics 24 hr 3 day 5 Day	turnar ounus.	Point Count	. P.	11	- 1	Metals Scan	l	11	Quantification	1	1.1	量	٥	"AS	TM E1			media only**	 		
MICROBIOLOGY LABORATORY HOURS: Weekdays: 9am - 6pm	100		SS Es		- 1				9	를 ! 왕	흲	e §	8				-				
	3-5 Day	Long report,	춵	OSHA		TCLP, Welding Furtle,		11	12		Ę	2 8	E	1							
Salmonella, Listeria, E.coli, APC, Y & M 48 Hr3-5 Day		ğ	= . S		Respirable livte(s)	멸	1		1				ĕ	J]]	<u> </u>		
	48 Hr3 Day5 Day	121	Level	7400B.	हुँ हि	8	ᆈᅬ	[7]	18	ਰੋ ਂ	8	5 8	S ₂	i					<u> </u>		
Tumaround times establish a laboratory priority, subject to tabelatory votume and ar apply for alterhours, weekends and helidays.	o not guarantoad. Additional fees	18	A E	14	æ 🗟	· >	+	E.cali 0157:H7:	اڇ ا ب	δ≱	+ 3	5 2	Ę) ૄ				_	_		
Spec/al Instructions:		Short	유구	ğ	- Total.	ᅙ	χ ξ	5	i iii	≯Ìë	8	7 4	2	₹ "	Code	Ser		'			. :
Special Instructions:		5	₹ §	=	∑ જુ	80	sanics - M Samonella:	8	Aerobic Plate	Colforns:	aureus	흥	Ä	8 g	Š	휼	Date	Time		mber (I Use Only	Lat oratory
Cilent sample ID number (Sample ID's must be unique)		夏	Semi	ş	METALS	RCRA 8.	ORGANICS - METH Samonella: +/-		⊒ ₹			- ≥	N.	Sample Volume (L) / Area	Matrix		Collected mm/tkg/yy	Collected		U30 U.I.,	,
1 3w-032112 W		-	×		-	-		\prod		T	Ï	\top	-	934	Ā		12412	distant alb	-	25	~2
2 3W-032112 M			Ť			1			11		11	+	1	934			1	1. 1.1		<u>یں۔</u> ا	CE
3 3W-032112 E			\top		\top	_				\top		†	† —	934			1		T	_	eg.
93W-032112 S			Ţ		1	\dashv			11	1		\top		934					4	7	720
5					+		+		+	+	11	+	1	1		_	Ψ	1	†`		ريو /
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9		1	_			1			\top	1	\sqcap	Ť						 			
10						7	\Box		\top	1	1						· .				
Number of samples received: (Addition	nal samples shall be listed on	attacl	ned lo	∩g farr	m.)				<u></u>	_		1						<u> </u>	<u> </u>		
NOTE: REI will analyzo innoming samples based here information received end will not be re analysis as indicated on this Crain of Custody snall constitute an analytical services agreeme	isponsible for eners or embsions in ca	elculatk	ons resu	iting ito	m itwir	accura	cy of or	riginal	data B	y sign	ing old	int/eq	mpany re	presentativ	e agra	es that s	ubmission o	f the following s	imples for re	quested	
		s, tupp				7	-1			7 1110	ing my pro	10,00	a a time rang	~	_						——
	Fed Ex			Date/	Time:	3/1	11/2						<u> </u>	Sa	mple	Condit	_		Sealed	Intac	;t
Laboratory Use Only Received By:	Time: 322(2	٠	2 522	33	<u></u>	rrier	上	> -	PE	= -	-			Te	mp. (l	^{=°)} —	` `	es/No	'es / No <	Yes /	No [
Results: Contact Phone Email Fax Date	Time Initia			ntact			Pho	one	Email	~~~				Date		_	Tin	16	Initia	als	\dashv
Contact Phone Email Fax Date	Time Initia		Co	ntact					Email	_				Date			Tin		Initia		$\neg \neg$
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7-2011_version 1

Attachment I

Key to Count Sheets Count Sheets Analytical Procedures

Structures identifications consist of an Asbestos Type followed by a Structure Type

Asbestos Type A = Amosite An = Anthophyllite C = Chrysotile Cr = Crocidolite Structure Types F = Fiber B = Bundle C = Cluster M = Matrix

ND = no structures detected

M = other structure associated with a matrix

NAM = Non Asbestos Mineral

XGB = partly obscured by a grid bar

Sizing Conversion
1 length unit = 5 mm on screen = 0.278 micron
1.80 length units = 0.5 micron
18.0 length units = 5 microns

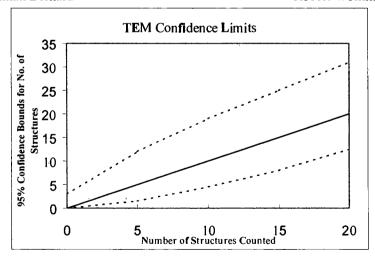
1 width unit = 1 mm on screen = 0.0556 micron

TEM Analysts

Jeanne S. Orr Nathan DelHierro Angela Heitger Jonathan Bernard

= Tremolite

Paul D. LoScalzo Mark Steiner Norberto Zimbleman Robert Workman



Upper and lower 95% confidence bounds for the number of structures counted assuming a Poisson distribution.

Reservoirs Environmental, Inc. TEM Asbestos Structure Count

Laboratory name:	REI
Instrument	JEOL 100 CX (N)S
Voltaae (KV)	100 KV
Magnification	20KX 10KX
Grid ocening area (mm2)	0.01
Scale: 1L =	0,28 um
Scale: 1D =	0.056 um
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	
QA Tyoe	

Client :	Rank
Sample Tyoe (A=Air, I)=Dust):	A
Air yolume (L) or dust area (cm2)	934
Date received by lab	3/22/12
Lab Job Number:	232197
Lab Sample Number:	873567

Analyzed by	JB
Analysis date	3/23/12
Mettiod (D=Dlrect, I=Indirect, IA=Indirect, ashed)	D
Counting rules (ISO, AHERA, ASTM)	Alt
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

F-Factor Calculation (Indirect Preps	Only):
Fraction of primary filter used	
Total Resuspension Volume (ml)	
Volume Applied to secondary filtar (ml)	

Grid	Grid Grid Opening Structure				Dimensions		Identification	Mineral Class				1 = y	es, blank	= no
O.I.G	Ond Operang	Туре	Primary	Total	Length	Width	Identinoation	Amphibole	С	NAM	Sketch/Comments	Sketch	Photo	EDS
A	H4-3	ND												
	(14-3	M					,							
	F4-3	ND			Pur	5 A	416 r	70% in	hus	4	5% debu	5		
	E4-3	ND							\mathcal{A}	/ 2				
	C4-3	ND				·			45	3/2	3/12			
B	H4-6	ND					:	. /						
	614-6	ND						· · · · · · · · · · · · · · · · · · ·						
	F4-6	ND												·
	E4-6	ND												

Reservoirs Environmental, Inc. TEM Astrestos Structure Count

Laboratory name:	REI
Instrument	JEOL 100 CX (Ñ)S
Voltage (KV)	100 KV
Magnification	20KX 10KX
Grid opening area (mm2)	0.01
Scale: 1L=	0.28 um
Scate: 1D =	0.056 um
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	
QA Type	

Client:	Rank
Sample Type (A=Air, D=Dust):	A
Air volume (L) oi dust area (cm2)	934
Oate received by lab	3/22/12
Lab Job Number:	232199
Lab Sample Number:	873568

F-Factor Calculation (Indirect Preps	Only):
Fraction of primary filter used	
Total Resuspension Volume (ml)	
Volume Applied to secondary filter (ml)	

Analyzed by	JB
Analysis date	3/23/12
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	7
Counting rules (ISO, AHERA, ASTM)	Alt
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

Grid	Grid Grid Opening Structur		No. of Structures		Dimensions		Identification	Mineral Class				1 = ye	s, blank	= no
Gild	Grid Opening	Туре	Primary	Total	Length	Width	identification	Amphibole	С	NAM	Sketch/Comments	Sketch	Photo	EDS
A	H4-3	ND												
')	(44-3	ND			Pa	s A	7	19% als	nf	5	-10/del	pus		
	F4-3	ND			Pup	3	80	ook - L	an t	S	10 % de	En s		· .
	E4-3	ND			,				1	<u>^</u>				
1	C4-3	ND_							1	3/	23/12			
B	G15-4	ND							//	-/	<i>J</i> .			
	F5-4	ND				,		. /						j
	E5-4	ND									·			
	65-4	ND												
				-										

Reservoirs Environmental, Inc. 7ER Asbeatos Structure Count

Laboratory name:	REL
Instrument	JEOL 100 CX (Ñ)S
Voltage (KV)	100 KV
Magnification	2010 1010X
Gild opening area (mm2)	0.01
Scale: 1L =	0.28 um
Scale: 1D =	0.056 um
Primary filtar area (mm2)	385
Secondary Filter Area (mm2)	
QA Type	

Client:	Rank
Sample Tyoe (A=Air, D=Dust):	A
Air yolume (L) or dust area (cm2)	934
Date received by lab	3/22/12
Lab Job Number:	232197
Lab Sample Number:	673569

F-Factor Calculation (Indirect Preps	Only):
Fraction of primary filter used	
Total Resuspension Volume (ml)	
Votuma Applied to secondary filter (ml)	

	,
Analyzed by	JB
AnaNsis date	3/23/12
Method (D=Direct, I=Indirect, IA=IndIrect, ashed)	D
Counting mles (ISO, AHERA, ASTM)	AH
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

Grid	Grid Grid Opening Structure		No. of Str	uctures	Dimer	nsions	Identification	Mineral Class				1 = yes, blank = no		= no
Ond	Ond Opening	Туре	Primary	Total	Length	Width	recining and in	Amphibole	С	NAM	Sketch/Comments	Sketch	Photo	EDS
A	13-3	ND		_,										_
	63-3	ND			Pus	A	70%	in funt	S	71/2	debres			
	H3-4	ND			Para	1	70 h	em but	5-	7 %	delmis			
	613-6	ND							(
	F3-6	\sim						19	3/2	3/12				
B	K3-6	ND				` .		//	/	/				
	H3-0	ND						·			·			
	613-6	ND			·								·	
	F36	WD										· ·		

Laboratory name:	REI
Instrument	JEOL 100 CX (N)S
Voltage (KV)	100 KV
Magnification	20k3 10KX
Grid opening area (mm2)	0.01
Scale: 1L=	0.28 um
Scale: 1D =	0.056 um
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	
QA Type	

Rank
A
934
3/22/12
232199
673570

Analyzed by	JB
Analysis date	3/23/12
Method (D=Direct, I=Indirect, iA=Indirect, ashed)	J D
Counting rules (ISO, AHERA, ASTM)	AH
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

F-Factor Calculation (Indirect Preps	Only):
Fraction of primery filter used	•
Total Resuspension Volume (mf)	
Volume Applied to secondary filter (mi)	

Grid	Grid Opening	Structure	No. of Str	uctures	Dimer	nsions	Identification	Mineral Class		eral Class		1 = ye	s, blank	= no
GIRG	Ond Opening	Туре	Primary	Total	Length	Width	Identification	Amphibole		NAM	Sketch/Comments	Sketch	Photo	EDS
A	K3-4	ND		<u></u>										
	H3-4	ND			Fins	A	60	em but		5-1	o'l de bu	<u> </u>		
	63-4	ND			Rap	3	700	hin tant		5-10	ho delow	•		
	F3-4	ND					,		6		<u></u>			
	E3-4	ND							B 3	/23/	2			
3	E3-3	ND						//	/					
	C3-3	WD				<u>'</u> .								
	133-3	WD		·	·									
	C3-4	ND				:								
	,										·			

Analytical Procedures - AHERA

Transmission electron microscopy/energy dispersive X-ray spectrometry/selected area electron diffraction (TEM/EDX/SAED) was employed in the analysis of the samples, which were collected on 25 mm mixed cellulose ester air filters. A portion of each filter was collapsed with acetone and etched in a plasma asher. The etched filter was then coated with a thin layer of carbon in a carbon side down. The sample was then placed inside a condensation washer and treated with acetone to remove the filter matrix and expose any inert material.

For each sample, enough grid openings on a 200 mesh TEM grid are analyzed to ensure an analytical sensitivity of at least 0.005 structures/cc. A minimum of four grid openings from two preparations are analyzed for each sample. The grid openings are searched for fibrous structures which, if present are analyzed by SAED and/or EDX (elemental analysis). The AHERA protocol requires SAED confirmation of enough chrysotile asbestos structures on each sample to cause the sample to exceed 70 structures/mm² (usually 4 or 5 structures). Both SAED and EDX confirmation are required of enough amphibole structures on each sample to cause the sample to exceed 70 structures/mm² (usually 4 or 5 structures) per sample. Either SAED or EDX is required for the remaining asbestos structures of either type. The morphology of each structure is determined and the length and the diameter of any asbestos structures are recorded. Asbestos fibers, bundles, cluster and matrices were identified and recorded. The asbestos structures have been defined in AHERA as follows:

Fiber: is a structure having a minimum length greater than or equal to 0.5

micron with an aspect ratio of 5:1 or greater with substantially parallel

sides.

Bundle: is a structure composed of three or more fibers in parallel arrangement,

with each fiber closer than the diameter of one fiber.

Cluster: is a structure with fibers in random arrangements such that all fibers are

intermixed and no single fiber is isolated from the group.

Matrix: is a fiber or fibers with one end free and the other end embedded or

hidden by a particulate. The exposed fiber end must meet the fiber

definition given above.

If more than 50 asbestos structures are identified and confirmed on a sample, AHERA analysis may be terminated after completion of the grid opening, which contains the 50th structure. AHERA protocol requires the laboratory to reject any clearance sample which contains in excess of 25% total particulate loading or which appears to be unevenly loaded.

The AHERA protocol includes specific sampling requirements, including minimum numbers of samples and minimum air volumes. Specifically, the 70 structures/mm² clearance criteria is only allowed for sets five inside samples (collected in a group of 13 samples including: five outsides and three blanks) with volumes greater than 1200 liters (40 CFR Part 763, page 41894). Deviation from the AHERA sampling protocol may affect the validity of the analytical results. Analysis of samples collected by non-protocol methods are not accredited by NVLAP

Equations Used for Calculations

Area Anaiyzed, $mm^2 = \# GO \text{ counted } x \text{ Average } GO \text{ Area } (mm)$

Concentration, $s/cc = \frac{\text{\# Asbestos Structures}}{\text{\# GO Counted}} \times \frac{1}{\text{Volume (L)}} \times \frac{\text{Eff. Filter Area (mm}^2)}{\text{Average GO area (mm}^2)} \times \frac{1L}{\text{j 000cc}}$

Filter loading, s/mm² = $\frac{\text{\# Asbestos structures}}{\text{Area Analyzed (mm}^2)}$

GO = TEM grid opening



March 26, 2012

Laboratory Code:

RES

Subcontract Number:

NA

Laboratory Report: Project # / P.O. # Project Description: RES 232286-1 None Given 3rd West Sub

David Roskelley R & R Environmental 47 West 9000 South #2 Sandy UT 84070

Dear Customer,

Reservoirs Environmental, Inc. is an analytical laboratory accredited for the analysis of Industrial Hygiene and Environmental matrices by the National Voluntary Laboratory Accreditation Program (NVLAP), Lab Code 101896-0 for Transmission Electron Microscopy (TEM) and Polarized Light Microscopy (PLM) analysis and the American Industrial Hygiene Association (AIHA), Lab ID 101533 - Accreditation Certificate #480 for Phase Contrast Microscopy (PCM) analysis. This laboratory is currently proficient in both Proficiency Testing and PAT programs respectively.

Reservoirs Environmental, Inc. has analyzed the following samples for asbestos content as per your request. The analysis has been completed in general accordance with the appropriate methodology as stated in the attached analysis table. The results have been submitted to your office.

RES 232286-1 is the job number assigned to this study. This report is considered highly confidential and the sole property of the customer. Reservoirs Environmental, Inc. will not discuss any part of this study with personnel other than those of the client. The results described in this report only apply to the samples analyzed. This report must not be used to claim endorsement of products or analytical results by NVLAP or any agency of the U.S. Government. This report shall not be reproduced except in full, without written approval from Reservoirs Environmental, Inc. Samples will be disposed of after sixty days unless longer storage is requested. If you have any questions about this report, please feel free to call 303-964-1986.

Sincerely,

Jeanne Spencer Orr

President

RESERVOIRS ENVIRONMENTAL, INC.

NVLAP Lab Code 101896-0; TDH: #30-0015

TABLE I. TEM AIR FILTER SAMPLE DATA AND ANALYTICAL RESULTS

RES Job Number:

RES 232286-1

Client:

R & R Environmental

Client Project Number / P.O.: Client Project Description:

None Given

Date Samples Received:

3rd West Sub March 23, 2012

Analysis Type:

TEM, AHERA

Turnaround:

24 Hour

Date Samples Analyzed:

March 23, 2012

Client ID Number	Lab ID No	umber	Area Analyzed	Air Volume Sampled	Number of Asbestos Structures Detected	Analytical Sensitivity	Asbestos Concentration	Filter Loading
			(mm²)	(L)		(s/cc)	(s/cc)	(s/mm²)
3W-032212 W	EM	873724	0.1000	85 3	ND	0.0045	BAS	BAS
3W-032212 N	EM	87 3 7 2 5	0.1000	855	ND	0.0045	BAS	BAS
3W-032212 E	EM	87 3 7 26	0.1000	855	ND	0.0045	BAS	BAS
3W-032212 S	EM	87 3 727	0.1000	855	ND	0.0045	BAS	BAS

NA = Not Analyzed

Filter Material = Mixed Cellulose Ester

ND = None Detected

Filter Diameter = 25 mm

BAS = Below Analytical Sensitivity Average Grid Opening in mm² = 0.010 Effective Filter Area = 385 sq mm

Due Date: 3 - 2(0-17)
Due Time: 8:40

REILAB RESERVOITS ENVIRONMENTAL, INC. 5801 Logan St. Oenvar, CO 80215 • Ph. 303 964-1686 • Fax 303-477-4275 • Toll Frae :868 RESI-BNV Pagar : 309-409-2008

	INVOICE TO: {			CNT									_	ONITAC	·T 11	JEOF	384 A T	TON.				
Company: (1 & P	Company:	IL DI	FFER	ENT		Con	tact:	Mu	00	را ح	ما اه	. 1		ONTAC	. 1 10	Cont		TOW:				
Address: 47 W 9000 S. #2	Address:			Contact: Dave Roskelley Phone:										Phone;								
Sandy W. 8-1070					Fax:									Fax								
, , ,			Cell/pager: 801 541-							- IE	35	5			Catt/ç	agar.						
Project Number and/br P.O. #:							l Data I	Doliven	bis E	meli Ad	ldress:											
Project Description/Location: 3.74 Wost Sub						1	<u>dau</u>	<u>e</u> (3	res	whr	0-0	Dw									
ASBESTOS LABORATORY HOURS: Weekdays: Tani - 7pm		T			R	EQUI	STE	D At	VAL	YSIS	S	121.	:	Ţ	VA	LID N	AATR	IX CC	DDES	J. L	AB NOT	ΓES:
PLM / PCM / EM RUSH (Same Day) A PRIORITY (Next	Day)STANDARD	T			П		П	\top	Τ						Air =	- A		В	lulk = B			
(Rush PCM = 2hr, TEM = 6hr.)			1		H		- 1	11	ı						Dust	= D	\Box	Pr	aint = P			
CHEMISTRY LABORATORY HOURS: Weekdays: 8am - 5pm					[Soil :	= S	\bot	Wi	ipe = W		326	()-
Matal(s) / DustRUSH 24 hr,3-5 Day		١.	뒽.		l i					.		ı				= SW			= Food	'ـــــــــــــــــــــــــــــــــــــ		
RCRA 8 / Metals & Welding RUSH 5 day 10 day	Prior notification is required for RUSH	Į	Quant		1 1	Į	ĺ	11	, g			on santification	i	Drinkin	g Wa				Water = WW	\succeq	<u>'</u>	
Fume Scan / ICLP	turnarounds.**	္ည	} \$ \$		1 1	ဖွဲ့			age of							O = Other			·	 		
Organics 24 hr 3 day S Oay		Point Count	8 8			Metals Scan			a		8 8	32.0	Ž	"AS	ME	E1792 approved uipe modia only				↓		
MICROBIOLOGY LABORATORY HOURS: Weekdays: 9am -		닉ᇂ	1 ~ 2	: I I				11	6			5 0	1 12			1 1					<u></u>	
E.coli 0157:H7, Coliforms, S.aureus 24 hr 2 Da Salmonella, Listeria, E.coli, APC, Y & M 48 Hr 3-5		€	7402 12 02	OSHA		rle(s) Welding Fume,	- 1	11	*	1	Quentifical Quentifical	13 E	ō		1	1 1	ı	1	1	-		
	48 Hr3 Day5 Day	§			<u> </u>	<u>E</u>		+	늘	1		٤	Ö							-		
		늰륯	Level II,	7400B,	Respirable	- Analyte(s) TCLP, Weldi	E		8	ð	े ठ	× 5	Į₹	1_	ł	1 1	ı	Ì	ł	 		
**Turnaround three establish a laboratory priority, subject to laboratory volume an apply for anarhours, waskends and holidays.*		" ¥	. 1 7	4		를 다	<u>َ</u> الإِل	. E	ate +	jo .	÷ +	<u>.</u> [پ	- <u> </u>	ĮĔ		اما	i		ĺ	 		
		- Se	AHERA,	7400A,	- Total,	? 🏮	8 8	E.coli D157:H7:	Listeria: +/- Aerobic Plate Count	*	Saureus:	* ¥	S	Volume	8	Containers			l	ENLA		^ -b
		%	* \$. -		A A S	A S	8	ste se	E.Sgi:		¥ 5	12	윤왕	×	튵	Da	-	Time	EM N	Uso Only	(Laboratory M)
Client sample ID number (Sample ID's must be uni	aue)	크	TEM - AHE Seml-quant,	PC.	DUST	METALS RCRA 8.	ORGANICS - METH				roo.	714	SAMPLER'S INITIALS OR OTHER	Sample V (L) / Area	Matrix	ပို #		ected ddyy	ht/mm s/p	1 10		
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3 3W -03742 E		+	++	$\dagger \dagger$			\dashv	++		Ħ	+	+	 	855	:#	\Box		\neg		 	<u> </u>	3/2
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NOTE: REI will analyze incoming samples based upon information received and will not analysis as indicated on this Chain of Cuglody shall constitute an analytical services apro	be responsible for errors or omissions in sement with payment terms of NET 30 da	calcula sys, fall	etions res lure to co	Suttino fi emply w	ron the	e inaccui ment ter	acy of	original result	data. in a 1	By aiç .5% m	nino ci onthiy i	enl/co	mpany re	prasenjativ 10.	e agra	jes thai	t submis	ision of t	the following sa	mples for r	equested	
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Laboratory Use Only Received ey:	Date/Time: , 3-23-/2		Y	:40	ر (arriar,	ta	do	W					Төі	np. (F°) _		_ Ye	es/No Y	os / No (Yes	7009
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Attachment I

Key to Count Sheets Count Sheets Analytical Procedures

Structures identifications consist of an Asbestos Type followed by a Structure Type

Asbestos Type

Structure Types

Α	=	Amosite	F =	Fiber
An	=	Anthophyllite	B =	Bundle
C	=	Chrysotile	C =	Cluster
Cr	=	Crocidolite	M =	Matrix
Т	=	Tremolite		

ND = no structures detected

M = other structure associated with a matrix

NAM = Non Asbestos Mineral

XGB = partly obscured by a grid bar

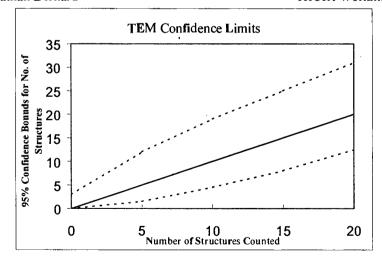
Sizing Conversion

1 length unit = 5 mm on screen = 0.278 micron
1.80 length units = 0.5 micron
18.0 length units = 5 microns

1 width unit = 1 mm on screen = 0.0556 micron

TEM Analysts

Jeanne S. Orr Nathan DelHierro Angela Heitger Jonathan Bernard Paul D. LoScalzo Mark Steiner Norberto Zimbleman Robert Workman



Upper and lower 95% confidence bounds for the number of structures counted assuming a Poisson distribution.

Laboratory name:	REI
Instrument	JEOL 100 CX N 6
Voltage (KV)	100 KV
Magnification	20H02-10KX
Grid opening area (mm2)	0.01
Scale: 1L =	0.28 um
Scale: 1D =	0.056 um
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	
QA Tyoe	

P+R A
A
853
3/23/12
232286
873724

<u> </u>	Fraction of primary filter used
Total Resuspension Volume (ml)	 fotal Resuspension Volume (ml)

Analyzed by	-CK
Analysis date	3/23/12
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	D
Counting rules (ISO, AHERA, ASTM)	Alt
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

Grid	Grid Opening	Structure	No. of St	ructures	Dimer	nsions	Identification	entification Mineral Class]	1 = yes, blank =			
		Туре	Primasy	Total	Length	Width		Amphibole	С	NAM	Sketch/Comments	Sitetch	Photo	EDS
A	K3-3	M				,								<u> </u>
	H3-3	M				Pre	PAZ	57 : Infait	ڔؙ	AX.	lebris			
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	F3-3	W				,								
	€3-3	M								,				
<u></u>	F5-4	M			ļ			<u> </u>						
	2504	M						,						
	CSVY	M												
	E4-4	N												
	C4-4	NAP												

Laboratory name:	REi
Instrument	JEOL 100 CX N
Voltage (KV)	100 KV
Magnification	2016X-10KX
Grid opening area (mm2)	0.01
Scale: 1L=	0.28 um
Scale: 1D =	0.055 um
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	
QA Type	

Client:	2+R
Sample Type (A⊭Air, D≖Dust):	A
Air volume (L) or dust area (cm2)	855
Date received by lab	3/23/12
Lab Job Number:	232286
Lab Sample Number:	873725

F-Faotor Calculation (Indirect Preps Only):							
Ftaction of primary filler used							
Total Resuspension Volume (ml)							
Volums Applied to secondary fitter (ml)							

Analyzed by	-CK
Analysis date	3/23/12
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	D
Counbng rules (ISO, AHERA, ASTM)	A1+
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

Grid	Grid Opening	Structure	No. of St	ructures	Dimer	nsions	Identification	Identification Mineral Class		Mineral Class		·	1 = yes, blank =		= no_
	S.id Opening	Туре	Primary	[′] Total	Length	Width	1	Amohiboie	С	NAM	Sketch/Comments	Sketch	Photo	EDS	
A	K-3-1	M								·					
<u> </u>	H3-1	M			<u> </u>										
	43-1	M				rex	A six	Indact 3	-71	te	brs.			·	
	F3-1	M				Pne	BN	A To	Me	. 2/	23/12			ļ	
	23-1	MÓ													
5	436	M						·							
	F36	M										<u>. </u>			
	23-6	M													
	c3-6	M									·				
	83-6	m				-									

Laboratory name:	REI
instrumant	JEOL 100 CX N S
Voltage (KV)	100 KV
Magnification	20KX 10KX
Grid opening area (mm2)	0.01
Scale: 1L=	0.28 um
Scale: 1D =	0.056 um
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	
QA Type	

Client:	2+R
Sample Type (A=Air, D=Dust):	A
Air volume (L) or dust area (cm2)	855
Date received by lab	3/23/12
Lab Job Number:	232286
Lab Sample Number:	973726

	
F-Factor Calculation (Indirect Pr	reps Only):
Fraction of primary filter used	·
Total Resuspension Volume (ml)	
Volums Applied to secondally filter (ml)	

A 1 1 b	- SU
Analyzed by	3/23/12
Analysis date Method (D=Direct, I=Indirect,	7~
IA=Indirect, ashed)	$ \cup$ $-$
Counting rules (ISO, AHERA, ASTM)	A1+
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

Grid	Grid Opening	Structure	No. of St	ructures	Dimer	nsiorts	Identification	Mineral Class				1 = yes, blank		
	J.I.S. S POILING	Туре	Primary	Total	Length	Width	1	Amphibole		NAM	Sketch/Comments	Sketch	Photo	EDS
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	E4-6	MO				Pm	y B~	(insuet :	ک سان	-71	debm	<u> </u>		٠,
	C4-6	M									a for fl	3/2	3/1	
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B	H5-6	ND						,						
	45-4	M												
·	F5-6	W			·									
	K4-6	MÓ												
	464	M												

Laboratory name:	REI
instrument	JEOL 100 CX N
Voltage (KV)	100 KV
Magnification	2016X 10KX
Grid opening area (mm2)	0.01
Scale: 1L =	0.28 um
Scale: 1D=	0.056 um
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	,
QA Tyoe	

Client:	2+R
Sample Type (A=Air, D=Dust):	A
Air yolume (L) or dust area (cm2)	855
Date received by lab	3/23/12
Lab Job Number:	232286
Lab Sample Number:	973727

F-Factor Calculation (Indirect Preps Only):								
Fraction of primary filter used								
Total Resuspension Volume (ml)								
Volume Applied to secondary fillar (ml)								

Analyzed by	-CK
Analysis date	3/23/12
Method (D=Dlrecl, I=Indirect, IA=Indirect, ashed)	0
Counting rules (ISO, AHERA, ASTM)	Alt
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

Grid	Grid Opening	Structure	No. of St	nictures	Dime	nsions	Identification	Mineral Class				1 = yes, blank = no			
	Ond Opening	Туре	Primary	Total	Length	Width	Identification	Amohiboie	С	NAM	Sketch/Comments	Sketch	Photo	EDS	
A	15-3	M								,					
	95-3	· M.				Ince	A807	insince 15	20%	det	<i>C</i> >				
	P5-3	M				Ine	B~1	+ In	Ve	3/2	3/12				
	25-1	M								<u> </u>				<u>.</u>	
	05-1	M					,								
6	941	M													
	Ful-1	M				<u> </u>									
	84-1	M						-							
	C4-1	im				r .	,								
	B4-1	M													

Analytical Procedures - AHERA

Transmission electron microscopy/energy dispersive X-ray spectrometry/selected area electron diffraction (TEM/EDX/SAED) was employed in the analysis of the samples, which were collected on 25 mm mixed cellulose ester air filters. A portion of each filter was collapsed with acetone and etched in a plasma asher. The etched filter was then coated with a thin layer of carbon in a carbon side down. The sample was then placed inside a condensation washer and treated with acetone to remove the filter matrix and expose any inert material.

For each sample, enough grid openings on a 200 mesh TEM grid are analyzed to ensure an analytical sensitivity of at least 0.005 structures/cc. A minimum of four grid openings from two preparations are analyzed for each sample. The grid openings are searched for fibrous structures which, if present are analyzed by SAED and/or EDX (elemental analysis). The AHERA protocol requires SAED confirmation of enough chrysotile asbestos structures on each sample to cause the sample to exceed 70 structures/mm² (usually 4 or 5 structures). Both SAED and EDX confirmation are required of enough amphibole structures on each sample to cause the sample to exceed 70 structures/mm² (usually 4 or 5 structures) per sample. Either SAED or EDX is required for the remaining asbestos structures of either type. The morphology of each structure is detennined and the length and the diameter of any asbestos structures are recorded. Asbestos fibers, bundles, cluster and matrices were identified and recorded. The asbestos structures have been defined in AHERA as follows:

Fiber: is a structure having a minimum length greater than or equal to 0.5

micron with an aspect ratio of 5:1 or greater with substantially parallel

sides.

Bundle: is a structure composed of three or more fibers in parallel arrangement,

with each fiber closer than the diameter of one fiber.

Cluster: is a structure with fibers in random arrangements such that all fibers are

intermixed and no single fiber is isolated from the group.

Matrix: is a fiber or fibers with one end free and the other end embedded or

hidden by a particulate. The exposed fiber end must meet the fiber

definition given above.

If more than 50 asbestos structures are identified and confirmed on a sample, AHERA analysis may be terminated after completion of the grid opening, which contains the 50th structure. AHERA protocol requires the laboratory to reject any clearance sample which contains in excess of 25% total particulate loading or which appears to be unevenly loaded.

The AHERA protocol includes specific sampling requirements, including minimum numbers of samples and minimum air volumes. Specifically, the 70 structures/mm² clearance criteria is only allowed for sets five inside samples (collected in a group of 13 samples including: five outsides and three blanks) with volumes greater than 1200 liters (40 CFR Part 763, page 41894). Deviation from the AHERA sampling protocol may affect the validity of the analytical results. Analysis of samples collected by non-protocol methods are not accredited by NVLAP

Equations Used for Calculations

Area Anaiyzed, mn1² = # GO counted x Average GO Area (mm)

Concentration, $s/cc = \frac{\# \text{ Asbestos Structures}}{\# \text{ GO Counted}} \times \frac{1}{\text{Volume (L)}} \times \frac{\text{Eff. Filter Area (mm}^2)}{\text{Average GO area (mm}^2)} \times \frac{\text{IL}}{1000cc}$

Filter loading, s/mm² = # Asbestos structures Area Analyzed (mm²)

GO = TEM grid opening



March 27, 2012

Laboratory Code:

RES NA

Subcontract Number: Laboratory Report:

RES 232406-1 None Given

Project # / P.O. #
Project Description:

3rd West Sub - RMP

Eldon Romney R & R Environmental 47 West 9000 South #2 Sandy UT 84070

Dear Customer,

Reservoirs Environmental, Inc. is an analytical laboratory accredited for the analysis of Industrial Hygiene and Environmental matrices by the National Voluntary Laboratory Accreditation Program (NVLAP), Lab Code 101896-0 for Transmission Electron Microscopy (TEM) and Polarized Light Microscopy (PLM) analysis and the American Industrial Hygiene Association (AIHA), Lab ID 101533 - Accreditation Certificate #480 for Phase Contrast Microscopy (PCM) analysis. This laboratory is currently proficient in both Proficiency Testing and PAT programs respectively.

Reservoirs Environmental, Inc. has analyzed the following samples for asbestos content as per your request. The analysis has been completed in general accordance with the appropriate methodology as stated in the attached analysis table. The results have been submitted to your office.

RES 232406-1 is the job number assigned to this study. This report is considered highly confidential and the sole property of the customer. Reservoirs Environmental, Inc. will not discuss any part of this study with personnel other than those of the client. The results described in this report only apply to the samples analyzed. This report must not be used to claim endorsement of products or analytical results by NVLAP or any agency of the U.S. Government. This report shall not be reproduced except in full, without written approval from Reservoirs Environmental, Inc. Samples will be disposed of after sixty days unless longer storage is requested. If you have any questions about this report, please feel free to call 303-964-1986.

Sincerely,

Jeanne Spencer Orr

President

RESERVOIRS ENVIRONMENTAL, INC.

NVLAP Lab Code 101896-0; TDH: #30-0015

TABLE I. TEM AIR FILTER SAMPLE DATA AND ANALYTICAL RESULTS

RES Job Number:

RES 232406-1

Client:

R & R Environmental None Given

Client Project Number / P.O.: Client Project Description:

3rd West Sub - RMP

Date Samples Received:

March 26, 2012

Analysis Type:

TEM, AHERA

Turnaround:

24 Hour

Date Samples Analyzed:

March 27, 2012

Client ID Number	Lab ID Nu	ımber	Area Analyzed	Air Volume Sampled	Number of Asbestos Structures Detected	Analytical Sensitivity	Asbestos Concentration	Filter Loading
			(mm²)	(L)	-	(s/cc)	(s/cc)	(s/mm²)
3W-032312 W	EM	87 3 909	0.1000	864	ND	0.0045	BAS	BAS
3W-032312 N	EM	87 3 910	0.1000	864	ND	0.0045	BA\$	BAS
3W-032312 E	EM	873911	0.1000	864	ND	0.0045	BAS	BA\$
3W-032312 S	EM	873912	0.1000	864	ND	0.0045	BAS	BAS

NA = Not Analyzed

ND = None Detected

BAS = Below Analytical Sensitivity

Average Grid Opening in mm² = 0.010

Filter Material = Mixed Cellulose Ester

Filter Diameter = 25 mm

Effective Filter Area = 385 sq mm

DATA QA

Due Date: 3 2712

RESERVOIRS ENVIRONMENTAL, INC. SSOI Logan St. Omwer, CO 80215 • Ph; 303 984-1908 • Fax 303-477-4275 • Toll Free :966 RESHENV

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Project Number and/or P.O. #:								Oolivor	abio i	mail A	Addros	SS;										
Project Description Location: 72 West Sub-RMP							da	vel	<u>ر ۾</u>	γe	أنام	m),	arm									
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PLM / PCM / TEM RUSH (Same Day) / PRIORITY (Next Day)STANDARD					1			П				<u> </u>		Air :	Α		В	ılk = B			
(Rush PCM = 2hr, TEM = 6hr.)				1	- }	1			1	1			i I	L	Dust	= D		Pa	int = P			
CHEMISTRY LABORATORY HOURS: Weekdays: 8am - 5pm		1					1	1.			11	1		<u> </u>	Soil				pe ≃ W			
Metal(s) / Dust RUSH 24 hr 3-5 Day	"Prior notification is		an,							_		.		_		= SW	-		= Food			
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Organics 24 hr. 3 day 5 Day MICROBIOLOGY LABORATORY HOURS: Weekdays: 9am - 6pr			130 ect F	11		Metals Scan				3	Ş.	<u>چ</u>	2 2	<u> </u>	TWIE	T 2	pprove	5 wape r	nodia only			
E.coli O157:H7, Coliforms, Saureus24 hr2 Day	3-5 Day	Long report.		4						১ টু	Quantifica	Cuantification Quantification	bon, Quantification		ļ	1 [1				
Salmonella, Listeria, E.coli, APC, Y & M 48 Hr3-5 Dej	 -	9.6	7402, ISO-Indi	OSHA	9	rte(s) Welding Furne,				Ovantification	Ę	ള	LS OR OTH									
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apply for attorhours, weekends and holidays.**	•	ig.			- I	TCLP.	₹ .		÷	- 1 g	1 1	* ;	: 🚆	<u> </u>	و ا	. 2						
Special Instructions:		Shart report,	TEM - AHERA, Semi-quant, Mic	. 7400A.	.0 1	• 産 1	ORGANICS - METH	Salmonetta; +/- E.co!i O157:H7:	Ustena:	E.cof: 4/- or Qua	Cofforms:	aureus:	1. 18.	Sample Volume	S	Containers				EM Nun	nber (La	boratory
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Client sample ID number (Sample ID's must be unique)	₹.	Semi	PCM	DUST	풀었	8		MICI	ROBIO	OLO	3Y	8		_	#		dd/yy	hh/mm a/p	l		
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Attachment I

Key to Count Sheets Count Sheets **Analytical Procedures**

Structures identifications consist of an Asbestos Type followed by a Structure Type

Asbestos Type Structure Types = Amosite F = FiberAn = AnthophylliteB = Bundle= Chrysotile C = Cluster

Cr = Crocidolite = Tremolite

= no structures detected

= other structure associated with a matrix

M = Matrix

NAM = Non Asbestos Mineral

XGB = partly obscured by a grid bar

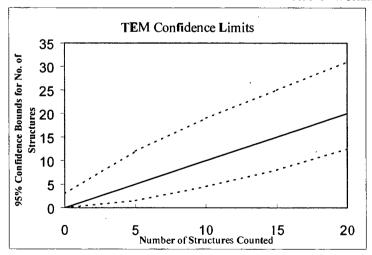
Sizing Conversion 1 length unit = 5 mm on screen = 0.278 micron. 1.80 length units = 0.5 micron 18.0 length units = 5 microns

1 width unit = 1 mm on screen = 0.0556 micron

TEM Analysts

Jeanne S. Orr Nathan DelHierro Angela Heitger Jonathan Bernard

Paul D. LoScalzo Mark Steiner Norberto Zimbleman Robert Workman



Upper and lower 95% confidence bounds for the number of structures counted assuming a Poisson distribution.

Laboratory name:	Reservoirs Environmental, Inc.
Instrument	JEOL 100 CX N
Voltage (KV)	100 KV
Magnification	20KX
Grid opening area (mm2)	0.010
Scale: 1L =	0.28 um
Scale: 1D =	0.056 um
Primary tilter area (mm2)	385
Secondary Filter Area (mm2)	n/a
QA Type	Not QA

R & R Environmental
Α
864
03/26/2012
232406
873909

F-Factor Caiculation (Indirect Pr	eps Only):
Fraction of primary fitter used	
Total Resuspension Volume (ml)	
Volume Applied to secondary filter (ml)	

Analyzed by	n.zimbelman
Analysis date	03/26/2012
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	D
Counting rules (ISO, AHERA, ASTM)	Ahera
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

Client Sample ID Number: 3W-032312W

Grid	Grid Opening	Structure	No. of Str	uctures	Dimer	nsions	Identification	Mineral Class				1 = y	es, blanic	= no
		Туре	Primary	Total	Length	Width		Amphibole	С	NAM	Sketch/Comments	Sketch	Photo	EDS
A	45-4	41												
	+14-3	46												
	¥1-6	SID		•										
	73-3	40					·							
	73-4	477												
	123	49			A : 25) TW	+, <2	(Jabri)			·			
B.	72-3	SI J												
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	F4-6	40			·		l .		1					
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Laboratory name:	Reservoirs Environmental, Inc.
Instrument	JEOL 100 CX N
Voltage (KV)	100 KV
Magnification	20KX
Grid opening area (mm2)	0.010
Scale: 1L =	0.28 um
Scale: 1D =	0.056 um
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	n/a
QA Type	Not QA

R & R Environmental
A
864
03/26/2012
232406
87391D

F-Factor Calculation (Indirect Pr	eps Only):
Fraction of primary filter used	
Total Resuspension Volume (ml)	
Volume Applied to secondary filter (ml)	

Analyzed by	n.zimbelman
Analysis date	03/25/2012
Method (D=Direct, I=Indirect,	
IA=Indirect; ashed)	D
Counting rules	
(ISO, AHERA, ASTM)	Ahera
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

Client Sample ID Number: 3W-032312N

Grid	Grid Opening	Structure	No. of Str	uctures	Dime	nsions	Identification	Mineral Class				1 = y	es, blank	= no
O/IO	One Opening	Туре	Primary	Total	Length	Width	Identification	Amphibole	С	NAM	Sketch/Comments	Sketch	Photo	EDS
A	64-1	신인												
	44.1	40												
	CB3-6	44												
	F3-6	بلا												
	F2-6	رياي												
	C2- 6	br				#:	90 / =	at- ~6	7	えかり	ر راب		~,	
3 -	T2-6	ر ب											·	
	73-1	46												
	F3-6	FLA					`				-			
	史-1	40				À	~· `	A.						

LA = Libby-type amphibole

OA = Other (non-Libby type) amphiboie

C = Chtysoble

NAM = Non-asbestos material
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	Reservoirs
Laboratory name:	Environmental.Inc.
Instmment	JEOL 100 CX N
Voltage (KV)	100 KV
Magnification	20KX
Grid opening area	
(mm2)	0.010
Scale: 1L =	0.28 um
Scale: 1D =	0.056 um
Primary filter area	
(mm2)	385
Secondary Filter Area	
(mm2)	n/a
1	
QA Tyoe	Not QA

Client	R & R Environmental
Sample Type (A=Air, D=Dust):	A
Air volume (L) or dust area (cm2)	864
Date received by lab	03/26/2012
Lab Job Number:	232406
Lab Sample Number:	873911

F-Factor Calculation (Indirect Pr	eps Only):
Fraction of primary filter used	
Total Resuspension Volume (ml)	
Volume Applied to secondary filter (ml)	

Analyzed by	n.zimbelman
Analysis date	03/26/2012
Method (D=Direct, I=Indirect,	
IA=Indirect, ashed)	D
Counting rules	
(ISO, AHERA, ASTM)	Ahera
Gnd storage location	Month Analyzed
Scope Alignment	Date Anaiyzed

Client Sample ID Number: 3W-032312E

Grid	Grid Opening	Structure	No. of Str	uctures	Oimer	nsions	Identification	Mineral Class				1 = y	es, blank	= no
One.	Grid Optiming	Туре	Primary	Totai	Length	Width		Amphibole	С	NAM	Sketch/Comments	Sketch	Photo	EOS
 	63-1	24			,									
	G2-6	とし												
	T3_(ALD.												
	王3-										,			
	ニレー6	لاب												
	C>-	47			4	85	(Jat.	3-5 %		12 W				
B	<u> </u>	J.S												
	王3.6	410						٠						
	F3-3	34												
	44-1	27					B~ A			$\frac{1}{x}$				

LA = Libby-type amphibole

OA = Other (non-Libby type) amphibole

C = Chrysotile

NAM = Non-asbestos material

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Laboratory name:	Reservoirs Environmental,Inc.
Instrument	JEOL 100 CX N
Voltage (KV)	loo KV
Magnification	20KX .
Grid opening area (mm2)	0.010
Scale: 1L =	0.28 um
Scale: 1D =	0.056 um
Pnmary fitter area (mm2)	385
Secondary Fitter Area (mm2)	n/a
QA Type	Not QA

Client:	R & R Environmental
Sample Type (A=Air, D=Dust):	Α
Air volume (L) or dust area (cm2)	864
Oate received by lab	03/26/2012
Lab Job Number:	232406
Lab Sample Number:	873912

Fraction of primary filter used	
Total Resuspension Volume (ml)	
Volume Applied to secondary filter (ml)	

Analyzed by	n.zimbelman
Analysis date	03/26/2012
Method (D=Oirect, I=Indirect, IA=Indirect, ashed)	D
Counting miles (ISO, AHERA, ASTM)	Ahera
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

Client Sample ID Number: 3W-0323125

Grid	Grid Opening	Structure Type	No. of Structures		Dimer	nsions	Identification	Mineral Class			1 = yes, blank = no			
			Primaty	Total	Length	Width	identification	Amphibole	С	NAM	Sketch/Comments	Sketch	Photo	EDS
4	15-3	क्री									,			
	44-4	لالب												
	#3-4	419					•							
	63-6	とひ												
	F3-6	त्रम			人	85	>/34.	5-10 /7	きらん					
В	63-6	LL)			•	
	#3-1	ध्य										***************************************		
	F3-4	<1 <i>d</i>												
	王3_{	4												
	<u>-3-</u> {	41				P	~ A	-			/			

LA = Libby-type amphibole

OA = Other (non-Libby type) amphibole

C = Chrysotile

NAM = Non-asbestos material

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Analytical Procedures - AHERA

Transmission electron microscopy/energy dispersive X-ray spectrometry/selected area electron diffraction (TEM/EDX/SAED) was employed in the analysis of the samples, which were collected on 25 mm mixed cellulose ester air filters. A portion of each filter was collapsed with acetone and etched in a plasma asher. The etched filter was then coated with a thin layer of carbon in a carbon side down. The sample was then placed inside a condensation washer and treated with acetone to remove the filter matrix and expose any inert material.

For each sample, enough grid openings on a 200 mesh TEM grid are analyzed to ensure an analytical sensitivity of at least 0.005 structures/cc. A minimum of four grid openings from two preparations are analyzed for each sample. The grid openings are searched for fibrous structures which, if present are analyzed by SAED and/or EDX (elemental analysis). The AHERA protocol requires SAED confirmation of enough chrysotile asbestos structures on each sample to cause the sample to exceed 70 structures/mm² (usually 4 or 5 structures). Both SAED and EDX confirmation are required of enough amphibole structures on each sample to cause the sample to exceed 70 structures/mm² (usually 4 or 5 structures) per sample. Either SAED or EDX is required for the remaining asbestos structures of either type. The morphology of each structure is determined and the length and the diameter of any asbestos structures are recorded. Asbestos fibers, bundles, cluster and matrices were identified and recorded. The asbestos structures have been defined in AHERA as follows:

Fiber: is a structure having a minimum length greater than or equal to 0.5

micron with an aspect ratio of 5:1 or greater with substantially parallel

sides.

Bundle: is a structure composed of three or more fibers in parallel arrangement,

with each fiber closer than the diameter of one fiber.

Cluster: is a structure with fibers in random arrangements such that all fibers are

intermixed and no single fiber is isolated from the group.

Matrix: is a fiber or fibers with one end free and the other end embedded or

hidden by a particulate. The exposed fiber end must meet the fiber

definition given above.

If more than 50 asbestos structures are identified and confirmed on a sample, AHERA analysis may be terminated after completion of the grid opening, which contains the 50th structure. AHERA protocol requires the laboratory to reject any clearance sample which contains in excess of 25% total particulate loading or which appears to be unevenly loaded.

The AHERA protocol includes specific sampling requirements, including minimum numbers of samples and minimum air volumes. Specifically, the 70 structures/mm² clearance criteria is only allowed for sets five inside samples (collected in a group of 13 samples including: five outsides and three blanks) with volumes greater than 1200 liters (40 CFR Part 763, page 41894). Deviation from the AHERA sampling protocol may affect the validity of the analytical results. Analysis of samples collected by non-protocol methods are not accredited by NVLAP

Equations Used for Calculations

Area Analyzed, mm² = # GO counted x Average GO Area (mm)

Concentration, s/cc = $\frac{\text{\# Asbestos Structures}}{\text{\# GO Counted}} \times \frac{1}{\text{Volume (L)}} \times \frac{\text{Eff. Filter Area (mm}^2)}{\text{Average GO area (mm}^2)} \times \frac{1L}{1000cc}$

Filter loading, s/mm² = # Asbestos structures Area Analyzed (mm²)

GO = TEM grid opening